THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, RAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. XXII. OF VOL. I., 1935. LONDON, SATURDAY, JUNE 1, 1935. Pp. 120—Price 1s.
No. 5831. VOL. CCXXVIII. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription: Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 2

NOW READY. SECOND EDITION.

DISEASES OF THE RECTUM AND COLON
AND THEIR SURGICAL TREATMENT.
BY
J. P. LOCKHART-MUMMERY,
F.R.C.S. ENG., M.A., M.B., B.C. CANTAB.,
Senior Surgeon to St. Mark's Hospital.
Pp. viii + 616, with 247 Illustrations. Price 35s.

Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B. (EDIN.).
With an Introduction by Sir ROBERT JONES, Bt., F.R.C.S.
Pp. 550. 337 X ray photographs, photographs and diagrams. 24s. net.
Constable & Co., Ltd., London.

BY W. SAMPSON HANDLEY, M.S. LOND.,
F.R.C.S., Surgeon to the Middlesex Hospital.

CANCER OF THE BREAST AND ITS TREATMENT.
Second Revised Edition. With 82 Illustrations. 30s. net. (John Murray.)

THE GENESIS OF CANCER: A STUDY OF THE GENETIC RELATIONSHIP OF LYMPH-STASIS AND CANCER.
Just Published. 113 Illustrations. 21s. net.
(Kegan Paul, Anglo-French Library.)

BY KENNETH M. WALKER, F.R.C.S.,
M.A., M.B., B.C.
DISEASES OF THE MALE ORGANS OF GENERATION.
Pp. 246. Coloured Plate and 78 Illustrations. 12s. 6d. net.
(Oxford University Press.)
THE ENLARGED PROSTATE.
New and Enlarged Edition. Pp. 223. Coloured Plate and 62 Illustrations. Price 14s. net. (Oxford University Press.)
SEX DIFFICULTIES IN THE MALE. (Second Edition.) 5s. net. (Jonathan Cape.)
PREPARATION FOR MARRIAGE. 5s. net. (Jonathan Cape.)

DISEASES OF THE THYROID GLAND
WITH SPECIAL REFERENCE TO THYROTOXICOSIS.
By CECIL A. JOLL, M.S., B.Sc., F.R.C.S. (Eng.).
Crown 4to. Fully Illustrated. £3 3s. net.
Revista de Libros: "This book is the best clinical treatise which we possess to-day on the pathology of the thyroid. . . . The excellence of the text is greatly enhanced by the illustrations."
William Heinemann (Medical Books) Ltd., 99, Great Russell-street, London, W.C.1.

FIVE NEW BOOKS

HALE-WHITE'S MATERIA MEDICA,
PHARMACY, PHARMACOLOGY & THERAPEUTICS
22nd Edition. Revised by A. H. DOUTHWAITE, M.D., F.R.C.P. 10s. 6d.
COMPARATIVE ZOOLOGY—An Introduction to
By F. G. SAREL WHITFIELD, F.R.E.S., F.R.M.S., and A. H. WOOD, M.A. 141 Illustrations. 15s.
EDEN & LOCKYER'S GYNÆCOLOGY FOR
STUDENTS AND PRACTITIONERS
4th Edition. Revised by H. BECKWITH WHITEHOUSE, M.S., F.R.C.S. 36 Col. Plates and 619 Text-figures. 38s.
ESSENTIALS OF MATERIA MEDICA,
PHARMACOLOGY AND THERAPEUTICS
By R. H. MICKS, M.D., F.R.C.P.I. 12s. 6d.
HUMAN PHYSIOLOGY
By F. R. WINTON, M.D., and L. E. BAYLISS, Ph.D.
2nd Edition. 221 Illustrations. 15s.
London: J. & A. Churchill Ltd., 40 Gloucester-place, W.1.

BY LIEUT.-COL. ROBERT HENRY ELLIOT,
M.D., B.S. Lond., F.R.C.S. Eng., I.M.S. retd.
A TREATISE ON GLAUCOMA.
2nd Edition. Revised and Enlarged. 30s. net.

TROPICAL OPHTHALMOLOGY.
With 7 Plates and 117 Illustrations. 31s. 6d. net.
Spanish and French Editions, 1922. Full German Abstract.

THE CARE OF EYE CASES: 12s. 6d. net.
MANUAL FOR NURSES, PRACTITIONERS, AND STUDENTS.
Chinese Edition. Oxford University Press.

GLAUCOMA 4s. net.
A HANDBOOK FOR THE GENERAL PRACTITIONER.

THE INDIAN OPERATION OF COUCHING FOR CATARACT.
7s. 6d. net. H. K. Lewis and Co. Ltd.

JOHN BALE, SONS & DANIELSSON, LTD.,
83–91, Great Titchfield-street, London, W.1,
announce the following books by
ROBERT V. STORER, M.R.C.S., L.R.C.P.,
Physician to the Cavendish Institute of Venereal Research.
MAN AND MORALS:
A SURVEY OF SEX. 7s. 6d. net.
MALADJUSTMENTS OF SEX:
A HANDBOOK OF SEXUAL PSYCHOLOGY. 7s. 6d. net.
SEXUAL TECHNIQUE:
ESSENTIALS OF SEXUAL HYGIENE. 7s. 6d. net.
GONOCOCCAL INFECTION:
MODERN METHODS IN DIAGNOSIS AND TREATMENT. 7s. 6d. net.
SEX AND DISEASE: Fourth Edition. Price 4s. 6d. net.

DISEASES OF THE HEART
THEIR DIAGNOSIS, PROGNOSIS, AND TREATMENT BY MODERN METHODS
With chapters on the Ink Polygraph, Clinical Electro-Cardiography, and Anæsthesia in relation to Cardio-Vascular Affections.
By FREDERICK W. PRICE, M.D., F.R.S. (Edin.),
Senior Physician to the National Hospital for Diseases of the Heart; Consulting Physician to the Royal Northern Hospital, London.
Demy 8vo. Pp. 534. With 249 text figures, including 32 sphygmograms, 92 polygraphic tracings, and 87 electro-cardiograms.
SECOND EDITION. 21s. net

"By great care and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observations."—LANCET.

"The most valuable and comprehensive guide to the study of Cardiology with which we are acquainted."—NEW YORK MEDICAL JOURNAL AND RECORD.

"We think that most of our readers engaged in general practice will find this work extremely useful."
—THE JOURNAL OF CLINICAL RESEARCH.

"In our opinion the book is indisputably the most authoritative contribution to Cardiology of our time."—FRANCO-BRITISH MEDICAL REVIEW.

"A book which we believe is destined to remain the standard work on Cardiology for many years to come."—AMERICAN MEDICINE.

"The second edition of this popular work on heart disease bears evidence of thorough revision, while the essentially clinical standpoint of the writer is maintained."—EDIN. MED. JOUR.

"It may be said at once that the book adequately fulfils the purpose it has in view and is a perfectly sound, lucid, and reliable guide."—NEWCASTLE MEDICAL JOURNAL.

"Well written, concise, and complete, containing a wealth of practical information. Obviously based upon the author's own experience and investigative work."—SURGERY, GYNECOLOGY AND OBSTETRICS (Official Journal of the American College of Surgeons).

"Dr. Price is to be congratulated again on the reappearance in its second edition of his distinguished contribution to the increasingly important subject of Cardiology."—THE CANADIAN JOURNAL OF MEDICINE AND SURGERY.

OXFORD UNIVERSITY PRESS, Amen House, Warwick Square, London, E.C.4.

FOR THE TREATMENT OF
CONJUNCTIVITIS, PAINFUL & TIRED EYES, & PINK EYE.

PHENOLAINE EYE DROPS

Phenolaine is an antiseptic and anæsthetic: there is no effect on the pupil or accommodation and the drops may be used daily for years without any harmful effect on the cornea.

SAMPLES AND LITERATURE FROM:—

THE PHENOLAINE COY.,
43, BREWER STREET, PICCADILLY CIRCUS, W.1
'Phone: GERRARD 4741

LESLIES ZŌPLA STRAPPING
(Zinc Oxide Plaster)

Powerful grip—no slipping

Thoroughly pliable

Consistently good

Strong White and Flesh Cloths, White Felt, etc. Samples on request

ZŌPLA—BAND
(Elastic Plaster Bandage)

Excellent for varicose veins, ulcers, sprains, etc., and where an elastic cloth is desirable

All widths from 1 inch

Cream and Flesh colour

Manufactured by LESLIES LTD., Higham Hill Road, Walthamstow, London, E.17
Telephone: LARkswood 1342

Felsol for
SPASM OF PLAIN MUSCLE

ASTHMA
ANGINA PECTORIS
DYSPNŒA OF PHTHISIS

Felsol relieves QUICKLY and CERTAINLY.
Felsol is ALWAYS READY FOR USE.
Felsol contains NO NARCOTICS.
Felsol consists of Powders for oral administration.

Literature and supply for clinical test from

BRITISH FELSOL COMPANY LTD.,
15, Caroline Street, London, W.C.1

Telephone
Museum 2855

Telegrams
Felsol, Westcent, London

JUNE 1, 1935

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS

No. 5831 LONDON, SATURDAY, JUNE 1, 1935 CCXXVIII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Abdominal and Circulatory Phenomena of Allergy. By JOHN A. RYLE, F.R.C.P. 1257
Biochemical Basis of Thyroid Function. II. By Prof. C. R. HARINGTON, F.R.S. 1261
Phosphatase in Fractures. By E. H. BOTTERELL, M.D., and E. J. KING, Ph.D.—(*Illustrated*) ... 1267
Obliterative Arterial Disease treated with Muscle Extract. By M. SCHWARTZMAN, M.B. 1270
"Imu": a Malady of the Ainu. By Prof. Y. UCHIMURA 1272

CLINICAL AND LABORATORY NOTES

A Case of B. Coli Meningitis. By T. A. RATCLIFFE, M.B. 1274
Chauffeur's Fracture. By W. B. R. MONTEITH, F.R.C.S.—(*Illustrated*). 1274

MEDICAL SOCIETIES

Royal Society of Medicine: Section of Medicine: Parenteral Liver Therapy 1275
Section of State Medicine: Epidemiology in Country Practice 1276
Chelsea Clinical Society: Sexual Problems in General Practice 1277
Medico-Legal Society: A Police Surgeon's Problems 1278
Manchester Medical Society: The Black Death in England 1279

REVIEWS AND NOTICES OF BOOKS

Midwifery. By Ten Teachers, under direction of Clifford White, F.R.C.S. Edited by Sir Comyns Berkeley and others.. 1280
Treatment of Rheumatism in General Practice. By W. S. C. Copeman, M.R.C.P. 1280
The 1934 Year Book of Pediatrics. Edited by Prof. Isaac A. Abt, M.D. With the collaboration of Arthur F. Abt, M.D. 1280
French Medicine. By Prof. Laignel-Lavastine and Dr. R. Molinéry. Translated by Prof. E. B. Krumbhaar 1280
Christine Murrell, M.D. By C. St. John 1281
Lumbalanästhesie in der Geburtshülfe und Gynäkologie. By Dr. E. Preissecker 1281
Urinary Analysis and Diagnosis. By L. Heitzmann, M.D. 1281
Clinical Laboratory Methods and Diagnosis. By R. B. H. Gradwohl, M.D. 1282
Bee Venom Therapy. By B. F. Beck, M.D. 1282
Clinical Pathology and the Technique of Collecting Specimens. By W. Smith, M.D. 1282
Lodgings for Twelve. By H. H. Bashford 1282

LEADING ARTICLES

TO COUNTER THE ILLS OF SOCIETY 1283
LISTER INSTITUTE 1284
THE THYROID GLAND IN HEALTH AND DISEASE.. 1284

ANNOTATIONS

Unemployment and Medical Benefit 1286
Narcotic Traffic in Egypt 1286
Fracture Dislocation of the Lower Radial Epiphysis 1286
American Comment on the Osteopaths Bill Inquiry 1287
The Blinding Filaria in Africa 1287
The Laurence-Moon-Biedl Syndrome 1288
Malaria in Ceylon 1288
Denervation of the Kidney 1288
New Journals of Anæsthetics 1289
Rheumatism under Review 1289
Pneumococcal Peritonitis 1290

NEW INVENTIONS

Iridectomy Scissors. By W. Y. Turner, M.B.—(*Illustrated*) 1279

PROGNOSIS

LIV.—Subacute Combined Degeneration of the Spinal Cord. By Prof. H. COHEN, F.R.C.P. 1291

SPECIAL ARTICLES

The Stewardship of Mental Health. By H. CRICHTON-MILLER, M.R.C.P. 1292
General Medical Council: President's Address 1298
Scotland: Edinburgh Hospital Extensions... 1295
Ireland: Medical Attendance on the Civic Guard 1296
Medicine and the Law: Claims against Deceased Practitioners.—Injuries to Inmate of Public Assistance Institution.. 1296
King Edward's Hospital Fund for London 1306
Infectious Disease in England and Wales 1300

CORRESPONDENCE

Stimulants of Metabolism (Dr. W. D. Newcomb, Dr. W. F. Christie).... 1301
A Case of Cannabis Indica Intoxication (Dr. W. A. J. Fleming) 1301
Administration of Carbon Tetrachloride for Hookworm (Dr. A. S. Tuxford) 1302
Psittacosis and Virus Infection (Mr. J. E. R. McDonagh, F.R.C.S.).. 1302
Ergometrine (Mr. H. W. Dudley, Ph.D., F.R.S.) 1303
Treatment of Scabies (Dr. J. T. Ingram).... 1303

OBITUARY

Thomas Cunningham Penfold, M.B. 1303
Dr. Abraham Groves.... 1303
Dr. John Pratt..... 1303

PARLIAMENT

Notes on Current Topics: National Health Insurance Bill.—Water-supplies Inquiry.—Indian Civil Servants and Medical Attendance 1304
House of Commons: Vivisection Certificates.—Births in England and Wales..... 1304

PANEL AND CONTRACT PRACTICE

Californian Health Insurance System.—Medical Benefit in Scotland 1299

THE SERVICES

Royal Naval Medical Service.—Army Medical Services.—Royal Army Medical Corps.—Royal Air Force 1297

MEDICAL NEWS

Society of Apothecaries.. 1307
University of Glasgow.... 1307
Charing Cross Hospital Medical School..... 1308
British Postgraduate Medical School..... 1308
National Hospital for Diseases of the Heart.. 1308
International Congress in Switzerland 1308
Maternity and Child Welfare Conference.... 1308
Health Congress at Harrogate..... 1308
Inquests in London..... 1308
Cambridge Graduates Medical Club 1308
Ophthalmological Congress in Berlin 1308
Research Defence Society 1308
London and Counties Medical Protection Society Limited 1308
New Middlesex Hospital 1308
Demonstrations of Contraceptive Technique 1308
City of London: Public Health Committee 1309
Lebanon Hospital for Mental Diseases 1309

NOTES, COMMENTS, AND ABSTRACTS

Life in Abyssinia..... 1311
Dr. J. H. Watson..... 1311
Bidloo and Cowper..... 1311
Vitamin A in Fish Liver Oil 1312
Medical Pioneers of Motoring..... 1312
Quins 1312
Medical Films..... 1312
Prevention of the Common Cold..... 1310

Med. Diary—Appointments 1309
Vacancies 1310
Births, Marriages, Deaths 1310

H. K. LEWIS & CO. LTD., MEDICAL PUBLISHERS AND BOOKSELLERS

Textbooks and Works in Medical, Surgical and General Science of all Publishers.

Orders by Post or Telephone promptly attended to. Estimates given for binding. **FOREIGN BOOKS** Catalogues post free on Application. Sets of Periodicals bound to order.

Books advertised or reviewed in this Journal can be supplied to order.

Medical Stationery, Loose-Leaf Case Books, Card Index Systems, Filing Cabinets, Name Plates in Bronze or Brass, etc. Hand-painted Shields of the Arms of Universities, Hospitals and Colleges.

Department for SECOND-HAND BOOKS, 140 Gower Street. Telephone: Museum 4031.

MEDICAL AND SCIENTIFIC LENDING LIBRARY

Annual Subscription, Town or Country, from One Guinea. *Prospectus on application*

LIBRARY READING ROOM (first floor) OPEN DAILY TO SUBSCRIBERS. Hours 9 a.m. to 6 p.m. Saturdays to 1 p.m.

136 GOWER STREET, LONDON, W.C. 1

Telegrams: "PUBLICAVIT, WESTCENT, LONDON." Telephone: MUSEUM 7756 (3 lines).

OXFORD MEDICAL PUBLICATIONS

Just Published

KING'S AND SOME KING'S MEN

Being a Record of the Medical Department of King's College, London, from 1830 to 1909, and of King's College Hospital Medical School from 1909 to 1934.

By **H. WILLOUGHBY LYLE**, M.D., F.R.C.S.

Fellow of King's College, London; Dean Emeritus of King's College Hospital Medical School; Consulting Ophthalmic Surgeon to King's College Hospital; Consulting Surgeon to the Royal Eye Hospital.

Contents include: The Founding of King's College, London—Early History of the Medical Department, 1831–9—The First King's College Hospital, 1939–61—The Second King's College Hospital, 1861–77—The Listerian Period, 1877–93—The Second King's College Hospital, 1894–1913—The Third King's College Hospital and the Medical School, 1913–18—King's College Hospital and Medical School, 1919–34—The Clubs and Societies Union—The Relation of King's College Hospital Medical School and Hospital to the other Hospitals of the Metropolis with their Medical Schools—Names, Distinctions, Appointments, etc., of "King's Men"—Index of Names—Index of References.

Pp. 623. 18 Plates. **25s.** net.

SPEECH IN CHILDHOOD: Its Development and Disorders

By **GEORGE SETH**, M.A., B.Ed., Ph.D., and **DOUGLAS GUTHRIE**, M.D., F.R.C.S., F.R.S.E.
Pp. 234. 46 Illustrations. **10s. 6d.** net.

THE METHOD OF ACTION OF RADIUM AND X RAYS ON LIVING TISSUES

By **HECTOR A. COLWELL**, M.B., Ph.D., M.R.C.P., D.P.H.
Pp. 176. 34 Illustrations. **15s.** net.

MANUAL OF DIABETES

By **J. J. CONYBEARE**, *M.C.*, M.D., F.R.C.P.
Pp. 130. 5 Figures. **6s.** net.

MANUAL OF OBSTETRICAL AND GYNÆCOLOGICAL PATHOLOGY

By the late **JOHN H. TEACHER**, edited by **ALICE J. MARSHALL**, M.B., Ch.B.
Pp. 426. 316 Illustrations. 2 Colour Plates. **45s.** net.

PRACTICAL MANUAL OF DISEASES OF THE CHEST

By **MAURICE DAVIDSON**, M.A., M.D., F.R.C.P.
Pp. 540. 199 Illustrations. 1 Colour Plate. **42s.** net.

X-RAY INTERPRETATION

By **H. CECIL H. BULL**, M.A., M.B., M.R.C.P.
Pp. 412. 280 Illustrations. **21s.** net.

COMPLETE CATALOGUE OF MEDICAL BOOKS FREE ON REQUEST

Oxford University Press

HUMPHREY MILFORD **AMEN HOUSE** **LONDON, E.C.**

ADDRESSES AND ORIGINAL ARTICLES

OBSERVATIONS ON THE ABDOMINAL AND CIRCULATORY PHENOMENA OF ALLERGY

By JOHN A. RYLE, M.D., F.R.C.P. Lond.
PHYSICIAN TO GUY'S HOSPITAL

IN recent times attempts have been made to spread the net of allergy too widely. Conditions having no clinical or ætiological relationships with the accepted allergic disorders have been discussed as possible or probable examples of these disorders. It is a primary duty of clinical study to define disease, to render descriptions more precise, and to establish diagnostic criteria. At present we include among the allergic disorders asthma, hay-fever, spasmodic rhinorrhœa, intermittent hydrarthrosis, urticaria, angioneurotic œdema, and eczema. With regard to migraine and epilepsy, although they appear not infrequently in persons and families subject to allergy and the former may be associated with food idiosyncrasies, opinion is less secure. A paroxysmal neurosis, although it consorts with "nervous" constitutions and develops in response to minimal stimuli, need not necessarily depend upon that type of idiosyncrasy which allergy implies. Activation of symptoms by anxiety or an east wind would not at present be considered as evidence of allergy. Certain gastro-intestinal disorders and circulatory phenomena have also been classified as allergic, but they stand in need of more careful portraiture.

It is the purpose of this paper to identify and define certain abdominal syndromes and circulatory disturbances which may be reasonably regarded as expressions of the allergic state and, on a purely clinical basis, to suggest criteria without which we should be unwilling to accept them as genuinely allergic.

Allergy and Anaphylaxis

The word allergy has not found its way into the Shorter Oxford Dictionary. In Dorland's Medical Dictionary it is described as "a condition of altered susceptibility which causes an individual to react to a second inoculation of an antigen in a manner different from his reaction to the first inoculation (von Pirquet). The term is now used to denote the natural hypersensitiveness of an individual as contrasted with anaphylaxis, which is hypersensitiveness artificially induced by inoculation." The clinical relationships of anaphylaxis and allergy are, however, very close. Identical symptoms occur in the artificially induced and the spontaneously developed disorder. Main distinctions between the two conditions are that anaphylaxis depends upon a specific sensitisation and has a limited course, whereas in allergic states precise specificity is rare or other forms of sensitiveness become superimposed upon an original form, while nervous reproduction of symptoms is readily conditioned. Cases of pure horse-asthma, for instance, are exceptional and in most asthmatics there is a multiplicity of circumstances which may condition or predispose to the attack. Furthermore the clinical course of an allergic disorder is recurrent and unlimited.

It would also seem that anaphylactic symptoms, although more readily induced in persons subject to allergic disorders, can be produced in some degree independently of particular constitutional predisposition. Allergy, on the other hand, is expressive of an inborn or constitutional predisposition and for this reason can result from smaller and often infinitesimal or undiscoverable stimuli.

"EXPERIMENTAL DISEASE" IN HUMANS

While serum-sickness is common, opportunities of studying anaphylactic shock in man are fortunately rare. It may baffle observation by proving immediately fatal. Some years ago, in conjunction with J. Fawcett, I wrote a paper entitled "Cases of Delayed and Immediate Anaphylactic Shock with a note on the Circulatory Phenomena." [1] I reproduce our descriptions and discussion of two cases here, together with an account of one other case seen since, for the sole purpose of portraying the "experimental disease" (which includes both serum-sickness and serum-shock), and considering thereafter how far it is possible to discover parallel phenomena in a group of "spontaneous" cases which I have since, after careful consideration, classified in my files under the heading of allergy.

CASE 1. *Delayed Anaphylactic Shock.*—A young woman, aged 23, was admitted into Guy's Hospital under the care of Mr. F. J. Steward on Nov. 5th, 1922, with a "septic" finger. Operations were performed on the 6th, 8th, 10th, and 12th, for spread of infection, amputation of the finger finally becoming necessary. On Nov. 10th 50 c.cm. of antistreptococcal serum were given subcutaneously at the time of operation. Four days later patches of urticaria began to appear, and there was slight evening pyrexia. The local condition after the 12th progressed satisfactorily. At 4.30 A.M. on the 18th, eight days after the serum was given, the patient was wakened by breathlessness. She was seen at 5 A.M. by one of us (J. A. R.) and was then sitting up in bed with "asthmatic" breathing. The respiration-rate was 30 per minute, expiration was prolonged and wheezing, and she was expectorating small quantities of clear mucoid sputum. Sibilant expiratory rhonchi were audible all over the chest. She was pale, and the pulse-rate was between 110 and 120 per minute. Urticaria was appearing in large patches all over the trunk and limbs; the lips, ears, and eyelids were swollen. The house surgeon, Mr. J. K. Milward, had given her an injection of liquor adrenaline 1/1000 m 2. Within 20 minutes the asthmatic attack was over, but she felt cold and shivery, the pulse remained quick, and urticaria continued to appear. She was packed round with hot blankets and bottles, and given hot tea and lactose. She was seen again at 8 A.M. By this time there were no asthmatic symptoms, but urticaria was still troublesome; she had vomited twice, had two actions of the bowels, and was completely pulseless. She complained of feeling "washed out," but apart from the cutaneous irritation and swelling of the gums, made no other specific complaint; she was mentally alert, and quite rational and calm, although she had before been considerably perturbed by the respiratory distress. At 10 A.M. we saw her together; no pulsation could be detected at the wrist or ankle, or in the carotid or subclavian arteries. The heart was not then, or at any subsequent observation, perceptibly enlarged, and there were no murmurs. The impulse was readily felt, the rate was 120–140 per minute, and the sounds were of good quality. She was not cyanosed. She was warm and the temperature was rising. The capillary tide in the nail-bed was good. The question of further administration of adrenaline was discussed, but we were agreed that, with such a degree of tachycardia, and no such urgent indication as "asthma" now persisting, it would be wiser to avoid the possible overstress to the heart which a sudden rise in blood pressure might entail. In spite of her apparently alarming condition a good prognosis was given, partly on the general impression of the patient's demeanour, the rising temperature, and disappearance of the shiveriness

[1] THE LANCET, 1923, i., 325.

of which she had at first complained, and partly on the experience of the other case referred to below. For more than twelve hours no pulse could be felt at the wrist. After twenty-four hours the radial pulse still could not be detected with certainty. Vomiting ceased, but the patient had some nausea and felt that she could not take fluids, except in the smallest quantities, for fear that she would be sick. She was pale and thirsty, had a moist clean tongue, and continued to state that she felt "washed out" and intolerably tired, but that she found difficulty in getting to sleep.

She was treated throughout with warmth, small quantities of fluid, brandy and lactose by the mouth, and six-hourly rectal administrations of 1 pint of 6 per cent. glucose. The foot of the bed was raised for a few hours, until she complained of the discomfort of the position. Sleep was secured at night with the aid of an opiate. Twenty-eight hours after the onset of the attack the radial pulse could be felt as a doubtful flicker, but not accurately counted. At the cardiac apex the rate could be readily determined as 120 to 130 per minute, but the sounds were not so clear as on the previous day. She now complained of acute pain in nearly all her joints. She could not open the mouth wide on account of pain in the temporo-mandibular joints, and the knees, ankles, wrists, and interphalangeal joints were similarly involved. There was no further trouble with urticaria. Aspirin was added to the rectal injections.

Almost abruptly at about 3 P.M. on the 19th or about 34 hours after the first appearance of urgent symptoms, the pulse became quite good in volume and slower in rate, and from then onwards it improved steadily. By midday on the 20th the pulse-rate was recorded as 80 per minute. After a further forty-eight hours all the joint pains had disappeared, but there was complaint of some deep-seated pain in the muscles of the left thigh. After this her progress was uninterrupted, except for the development of a small patch of erythema below the left knee, and later of an abscess in the right buttock. On the morning of the 18th, when the "shock" symptoms were at their height, the temperature reached 102°, but quickly fell again to normal. It rose during the period of the gluteal abscess, and became stable again after its drainage.

The remarkable feature of this case was the late development of severe shock-like symptoms, true anaphylactic shock being usually considered as an immediate rather than a remote phenomenon. Regarding serum-sickness as the usual anaphylactic response in human subjects, this case might alternatively be viewed as an extreme exaggeration of this response, for the symptoms of "serum-shock" and "serum-sickness" were coincident. Indeed, the case suggests the essential unity of the two conditions. The early development of urticaria, on the fourth day, was perhaps an indication of hypersensitiveness. The patient was not an asthmatic subject, and there was nothing else in her history to indicate that she was previously sensitive to foreign proteins. She had at the time no recollection of ever having had serum before, but it was later elicited from her mother that she had had diphtheria nineteen years previously, and that she was given antitoxin at the time. As there was no history of alarming symptoms on this occasion it would seem proper to regard her illness as a genuine instance of sensitisation by a previous dose. We thought it possible that immediate shock might have been averted by reason of the fact that she was under an anæsthetic at the time of administration of the serum. We were informed by Dr. P. P. Laidlaw that, although anæsthesia may relieve or avert bronchial spasm and so save life in the anaphylactic guinea-pig, it has little effect on similarly induced circulatory shock in dogs.

CASE 2. *Immediate Anaphylactic Shock.*—In October, 1918, a soldier was admitted to a main dressing station with a small wound of the buttock. He was pale, cold, and pulseless; he was vomiting and complaining of abdominal pains. So ill did he appear that special examinations were made to ascertain whether he might have an intra-abdominal lesion with hæmorrhage. The wound was carefully probed and found to be quite superficial. He was not aware of having sustained any other injury. Abdominal examination was negative. Within a short while urticaria appeared, and anaphylactic shock could be confidently diagnosed. The man had during his period of service received two previous prophylactic injections of A.T.S., after one of which he admitted to having "felt bad." He was examined probably within an hour or less of receiving the third dose of A.T.S., which had been given the same evening at an advanced dressing station. Mentally he was perfectly clear. He was treated as an ordinary case of surgical shock by warmth, elevation of the feet, and frequent small sips of fluid, but as after two or three hours the pulse was still impalpable he was sent down to a casualty clearing station with a special note. He there came under the observation of Major G. T. Mullally, who later reported that the man had remained pulseless for some hours, but was fit for evacuation to the base on the following day. Asthmatic symptoms were absent, and gastro-intestinal symptoms were the most prominent apart from those of circulatory failure.

The symptoms in both of the cases described suggested a profound fall in the systemic blood pressure of exceptionally long duration. Presumably the main volume of the blood must have accumulated in the splanchnic area. The absence of œdema and cyanosis, the rapid recovery and maintenance of superficial warmth, and the presence of a good capillary tide in the nail-bed would seem to exclude a capillary stagnation or heart failure. There was no unusual loss of fluid by sweating, diarrhœa, or diuresis, and the fluid intake was well maintained. The symptoms of circulatory shock persisted long after the disappearance of the bronchial, cutaneous, and gastro-intestinal reactions.

Neither before nor since have I seen any condition in which the state of pulselessness manifest in these two cases and persisting for so many hours was consistent with recovery.

CASE 3. *Delayed Anaphylactic Shock.*—A young married woman was operated on for acute appendicitis at 7 P.M. on Nov. 17th, 1932. At the conclusion of the operation she was given an injection of anti-gas-gangrene serum. On the morning of Nov. 23rd I was called urgently to see her with Dr. C. H. Atkinson. After a short period of malaise she had abruptly developed acute anaphylactic symptoms, including generalised urticaria, great œdema of the lips and eyelids, sensations of constriction in the throat, with attendant alarm, profound pallor, and pulselessness. An injection of liq. adrenaline 1/1000 m 3 was given immediately and repeated later. In a few minutes there was a rapid improvement and visible subsidence of the facial œdema; the radial pulse, although quick and small, became palpable; the sensation of constriction departed. Vomiting, diarrhœa, and pyrexia followed with much malaise and some fever. In the evening there was still great irritation from the urticaria, but the case gave no further anxiety. It was later discovered that this patient had been given diphtheria antitoxin in childhood and that she had a bad rash. She has since shown herself liable to primula rashes.

It should again be noted that this patient received her second dose of serum while under an anæsthetic. A few years ago I had under my care a very anæmic patient, who had twice displayed violent and alarming immediate anaphylactic reactions following blood-transfusion, but whose response to a further transfusion, purposely given under anæsthesia, passed without anxiety.

On the experience of the three cases described the circulatory phenomena of anaphylaxis may be

held to include pallor, tachycardia, initial coldness of the surface and extremities, and pulselessness due to a profound and sustained fall in blood pressure. In ordinary serum sickness a pulse-rate of 120 per minute is common. From the same cases we may also conclude that vomiting, purging, and diffuse pain are the outstanding abdominal symptoms of the anaphylactic state in man. Asthma, urticaria, "angio-neurotic" œdema, pyrexia, and multiple arthritis are among the other recorded symptoms.

DISTURBANCES ARISING WITHOUT APPARENT CAUSE

Let us now see how far these manifestations find a parallel (*a*) in acute and anxious disturbances arising spontaneously, or (more correctly) without apparent cause, and (*b*) in certain chronic or recurring disorders of less dramatic character.

CASE 4. *Abdominal Allergic Attacks; severe type.*—A married woman, aged 64, was brought to me by Mr. Hastings Gilford on Dec. 30th, 1931. Except for malaria many years previously her life had been healthy. *Her daughter suffered from asthma.* A year previously she had had an unexplained attack of malaise and sickness while abroad. In November, 1930, she had had a sudden severe attack of epigastric pain and cholecystitis was suspected. In January, 1931, she had an attack of quite a different kind, with violent generalised abdominal pain, vomiting, diarrhœa, and much shock. The vomitus was slightly streaked with blood. A succession of similar attacks followed at two to four weeks' interval. There were as many as four attacks within one period of a fortnight. An extreme degree of shock-like collapse was evident both to the patient and others around her. The acute phase was generally over within twelve hours. The X ray appearances of the gall-bladder were normal. She felt perfectly well between the attacks. A Chinese spiritualist, who affected to be able to see what was happening in the stomach, told her that she did not digest eggs! Most of the attacks had started at 2 A.M. *In one of the attacks her lips became tremendously swollen with angio-neurotic œdema.* In most of them her tongue was raw and red and her lips tended to peel afterwards. I could find no signs of organic disease.

CASE 5. *Abdominal Allergic Attacks; severe type.*—A medical man, aged 54, consulted me for the attacks to be described below. He had had malaria and pneumonia in childhood. *One brother had bad hay-fever.* Since childhood he had been liable to repeated abdominal attacks for which he had consulted many physicians. His longest free period had been nine months, his shortest ten days. The attacks generally started abruptly after premonitory lassitude. Fasting was a predisposing factor. In the attacks he had very severe generalised abdominal pain, starting under the rib margins, and of crescendo type. Nausea sometimes preceded, sometimes succeeded the onset of pain. Vomiting followed, and if it came early the attack passed more quickly. He was unable to eat or drink during the attacks, which would last from twenty-four to forty-eight hours. Throughout the attack he looked extremely pale and ill, and the pulse-rate rose to 120. He had a slight inguinal hernia, and during the attack "the sac seemed to fill with fluid," which he could press back into the abdomen. The abdomen was slightly swollen and it hurt him to take a deep breath. He had given up pork and bacon because one attack followed a pork pie, and mushrooms and fish because his skin had shown a slight reaction to these, but without benefit. In one attack a surgeon was called to see if he had appendicitis. Between the attacks he felt perfectly well. He had had *hay-fever* for thirty years, and for twelve years at intervals he had been subject to *angio-neurotic œdema* of his hand, arm, and perineum, and on five occasions of the palate and uvula, for which he had entered a nursing-home, fearing that tracheotomy might become necessary. Excepting for a right inguinal hernia and a myotonic right pupil, first noticed thirty years previously, there were no signs of any organic disease.

In both of these cases we find gastro-intestinal and circulatory phenomena closely comparable with those shown by the patients with anaphylaxis, and including shock, pallor, tachycardia, vomiting, diarrhœa, and abdominal pain. In addition we have, as confirmatory evidence, simultaneous or associated angio-neurotic œdema in both cases, hay-fever in one, and a solitary relative with an allergic disorder in both cases.

Before reviewing the less dramatic but more frequent allergic dyspepsias (in which circulatory manifestations are lacking or inconspicuous) there are further points in connexion with the vaso-motor phenomena of anaphylaxis and allergy which will bear consideration. Together with the objective pulse and blood-pressure disturbances of acute anaphylaxis from serum there may be associated the "sense of impending death" which, in conjunction with striking vaso-motor symptoms, is so pronounced a feature of vaso-vagal attacks (Gowers' syndrome). Vaso-vagal attacks chiefly affect patients who are, at the same time, physically unfit and in a state of anxiety. There is also, however, an occasional association between vaso-vagal attacks and migraine, asthma, epilepsy, spastic colon, and angio-neurotic œdema. All in fact proclaim an inborn hypersensitiveness which may be expressed in one or more of these several ways. It is rare in any of these to discover a specific sensitiveness as a basis for the vaso-vagal episodes, but an occasional case may develop symptoms in the first instance in response to a specific cause.

CASE 6. *Vaso-vagal Attacks following a Second Dose of Serum.*—A young man, aged 21 (a patient of Dr. A. W. Walters), whose feeding in infancy had caused much trouble and who had suffered from "mucous disease" until the age of seven, was thereafter fairly healthy until the age of eighteen. He then sustained a concussion and fractured a leg in a motor-cycle accident, and was given tetanus antitoxin. At the age of twenty-one he was involved in another motor-cycle accident, was again concussed, and fractured a small bone in his left hand, and was again given antitoxin. After this he was very unfit with urticaria and pyrexia, and developed attacks in which he was suddenly seized with a feeling of impending death and uncomfortable sensations about his heart. These attacks would last from half to one hour. When he sought to change his position things seemed to "black out" and he felt "wobbly" at the knees. He was terribly scared by these attacks, notwithstanding that he knew little of physical fear, was a keen rider to hounds, a member of the Auxiliary Air Force, and, as his history suggests, a none too cautious motor-cyclist.

The attacks continued for a time after the phase of serum-sickness. His father had experienced similar attacks at the age of twenty-seven but had outgrown them. I have no notes as to his appearance during these attacks but the subjective phenomena were those of Gowers' syndrome, of which the usual objective manifestations are pallor, coldness, and striking pulse and blood-pressure fluctuations. Had he experienced a solitary attack with urticaria immediately after the serum we should have accepted it as typical of anaphylaxis. It is reasonable to argue that the succession of attacks in this instance was initiated by a second dose of serum. The infantile and family histories suggest the conjunction with the therapeutic "experiment" of an appropriate "constitution."

ALLERGIC DYSPEPSIAS

It is not uncommon to meet persons who are aware of a food-idiosyncrasy. Shell-fish and eggs, especially duck's eggs, are well-known offenders and may give rise to gastric disturbance and erythematous or urticarial rashes. More rarely chocolate or coffee is blamed. Idiosyncrasies for drugs, not excluding those in common use like morphine (which may cause vomiting and collapse), are well recognised. The victims of these idiosyncrasies, however, although (like the horse-asthmatic) they exemplify a specific

sensitiveness, usually have the sense to avoid what is poisonous to them and are rather less likely to consult us for recurring allergic disturbances than those whose sensitiveness lacks discoverable specificity. Of this latter group, I have selected a few examples from my files. The case histories illustrate some of the types of gastric and colonic disturbance which may be encountered and my reasons for regarding them as allergic.

CASE 7.—A medical man, aged 59, developed indigestion at a time of great strain. A suspicion of duodenal ulcer was entertained but not confirmed. At the same time he developed angio-neurotic œdema affecting the lips and eyelids particularly, and developing usually on waking in the morning. When he went on a holiday he lost both the dyspepsia and the angio-neurotic œdema. Later, with an access of work and worry, the symptoms recurred and the scrotum and penis also became affected by the œdema. At this time he did not lose the symptoms on a holiday. *His father had hay-fever. Two sisters and two brothers had asthma. One sister had chronic urticaria. His daughter was asthmatic.* His dyspeptic symptoms developed between two and three hours after food, and he sometimes had hunger-pain in the night. He was sleeping badly and was very tired when I saw him.

I found no signs of organic disease, and prescribed a third partner, medinal at bedtime, and an early retirement from practice.

He wrote to me eight months later as follows: "You will be interested to hear that since I have had better nights my digestive apparatus has been quite a different thing, and I have had no signs of the giant urticaria which troubled me last winter." Now, two years later, he has retired from practice and remains perfectly well.

Non-specific treatment, as with asthma, may sometimes play a useful part in "unconditioning" allergic symptoms.

CASE 8.—A young woman, aged 32, was brought to me by Dr. C. Boyson on account of a series of attacks of abdominal pain in the course of the descending colon, lasting perhaps twenty minutes. Six weeks and two years previously she had had bad attacks of pain in which she was "doubled up." For over ten years she had been worried by indefinite abdominal pains, and both the gall-bladder and the appendix had come under suspicion. At times she had feelings of extreme emptiness. She was of nervous type. She believed that influenza could precipitate an abdominal attack, and that worries and smoking aggravated. The gall-bladder was radiologically normal. There was indefinite tenderness in the right iliac fossa. In childhood and later she had been troubled with *eczema*, and throughout adult life by *hay-fever* and a spasmodic rhinorrhœa which was induced by proximity to horses. One brother was *asthmatic* and her father was a "*sneezer*." Later she was seen in an attack of cholecystitis with slight icterus and local tenderness over the gall-bladder.

CASE 9.—A retired mining engineer, aged 70 (referred by Dr. D. R. Pike), had suffered from heart-burn for many years with aggravation latterly. He was chiefly troubled between 3 and 6 A.M., when he was wakened by œsophatical burning and spasm, choking and hiccups, and would expectorate much watery fluid. A diagnosis of duodenal ulcer had been made by one physician, although there was no radiological confirmation. He was intolerant of salt meat and Vermouth, and knew his evening cigar "did him no good." His mother and maternal uncles had *asthma*. He himself showed a well-marked factitious *urticaria*.

CASE 10.—A married woman, aged 37, a patient of Dr. F. G. France, gave a long history of abdominal pain, had seen many physicians, and been fully investigated in a London hospital, without result or benefit. Seven years previously she had had a hysterectomy for menorrhagia and dysmenorrhœa. Her complaint was of a dull, aching, linear pain in the course of the descending colon, with aggravation by worry, exertion, and after defæcation, features characteristic of the "spastic colon." The stools were rather loose, and she had a feeling that the bowel was never empty. Apart from a myotonic left pupil there was no evidence of organic disease. She also suffered from *urticaria* and *hay-fever*, and her mother had suffered from *urticaria*.

CASE 11.—A married woman, aged 38, with three young children, was brought to see me by Dr. R. W. Todd, for recurring abdominal crises characterised by severe abdominal pain, profuse vomiting, even water being rejected, a temperature not exceeding 99°, and a quick pulse. There was general tenderness in the attacks with "semi-rigidity," but no distension. Appendicitis had been queried. In one attack the pain was chiefly epigastric; in another right-sided. Morphine had been given on one occasion. The attacks passed over in two or three days. After her last pregnancy a year previously the bowels had been slightly loose. One attack had followed shell-fish. She had also had slight attacks of *angio-neurotic œdema* affecting the lip and, following the last abdominal seizure, some "large raised bumps" on the back of the neck. She had always been liable to "acidity" and skin troubles. In her most recent attack there was headache. On several occasions she had experienced extremely severe attacks of *rectal spasm* lasting twenty minutes. Her first baby suffered from *universal eczema*. Apart from slight deep tenderness in the right iliac fossa there was no evidence of disease.

One of the chief difficulties in cases of this type is the differentiation from appendicitis. It is also to be remembered that appendicular infection or a gall-bladder infection may (as I have more than once been led to believe) act as the "sensitiser" in a patient with allergic tendencies. Diagnostic finality in cases of this kind may only be attained by a "follow up" over a period of years. The association of cutaneous or other allergic phenomena with abdominal attacks can never of itself exclude a more organic basis for such attacks.

CASE 12.—A married woman, aged 59, highly strung and fond of good living (seen with Dr. C. H. Atkinson), had shown unusually severe reactions to the extraction of teeth and also to vaccines prepared from them as a treatment for rheumatism. Over a period of two or three years she had several extremely severe abdominal attacks, starting with a girdle-like pain of colicky character, which at times "doubled her up" and necessitated morphine. With some of them she experienced headache. A year prior to my being called to see her she had been troubled by a very obstinate *urticaria*, which eventually departed after calcium injections. On April 12th, 1934, she felt "off colour," nervy and irritable, and then had one of these attacks with passage of pale stools, a temperature of 101·4, and a pulse-rate of 100. This attack, like the others, passed off "in a day or two." Possible precipitating causes had been shell-fish, smoked salmon and cream. She was intolerant of eggs and chocolate. As a child she had had bronchial troubles. Her doctor had seen her with spasmodic pain in the descending colon. I saw her on April 13th, and could find no signs of organic disease, and was of the opinion that her pains were colonic and, perhaps, an expression of allergy. On June 5th, 1934, she had a very bad attack of upper abdominal pain without vomiting, temperature 99°. There was some tenderness in the right iliac fossa. She was operated on that night for appendicitis (retro-cæcal) with localised peritonitis. After her wound had healed she experienced further trouble with obscure temperatures and abdominal pains.

Summary

Cases of "spontaneous" sensitisation or allergy have been compared with cases of "experimental" sensitisation or anaphylaxis. There is a close parallelism between the symptomatologies, subjective and objective, of serum-anaphylaxis and certain rare and alarming seizures occurring without apparent cause. These seizures are characterised by simultaneous gastro-intestinal and circulatory

symptoms, together with cutaneous manifestations or an associated history of these. They affect persons with individual and familial liabilities to asthma, hay-fever, and urticaria. In other persons showing similar liabilities we also discover a tendency to chronic or recurring disorders of stomach and bowel.

Generalised abdominal pain, vomiting, and diarrhœa, on the one hand, and pallor, tachycardia, and other shock-like manifestations on the other, are the features of the more severe and acute disorder. Recurring pain, of less intense type, in the gullet, stomach, and bowel, sometimes simulating organic disease, and looseness of the bowels are the main features of the more chronic dyspepsias.

There is little to distinguish the circulatory phenomena and subjective sensations of some vaso-vagal attacks (Gower's syndrome) from those of anaphylactic shock, and cases of Gower's syndrome may create, at the time of the attack, an equivalent degree of alarm. A case of Gower's syndrome following a second inoculation of tetanus antitoxin is described.

Referring to my notes of 19 cases filed under the heading of angio-neurotic œdema, I find, in addition to Case 7 two examples of associated dyspeptic disturbance and two of associated vaso-vagal attacks. A similar inquiry by cross-reference into my much larger asthmatic series would necessitate a more laborious inquiry, but the association of asthma with digestive and other allergic disorders is well recognised. With relapsing and evanescent disturbances such as those under review we depend, of necessity, for advances in our knowledge more upon detailed clinical observations and case histories than upon any other method of approach. The therapeutics of the individual case are also better served by close clinical scrutiny and adjustments based thereon than by allegiance to a particular method.

Conclusions

No abdominal or circulatory disturbance should be labelled as "allergic" unless two or preferably more of the following postulates are fulfilled:—

(1) The symptoms should bear close comparison with those observed in human anaphylaxis or serum-sickness.

(2) There should be a history of idiosyncrasy in respect of some food, beverage, tobacco, drug, or other extraneous substance.

(3) There should be observed, either in conjunction or alternating with the abdominal or circulatory episodes, other accepted allergic phenomena such as asthma, hay-fever, urticaria, or angio-neurotic œdema.

(4) There should be a family history of these disorders.

(5) The disturbances should show some such intermittency or periodicity as obtains with other allergic disorders.

(6) Every care should have been taken to exclude organic disease.

To these A. F. Hurst [2] would add the occurrence of eosinophilia and a favourable response to the therapeutic administration of adrenaline during attacks. My cases have all been seen in the course of consultative work, and I have had few opportunities of putting these additional tests to the proof.

[2] In Price's Text-book of The Practice of Medicine, London, 1933.

BIOCHEMICAL BASIS OF THYROID FUNCTION *

By C. R. Harington, M.A., Ph.D., F.R.S.

PROFESSOR OF PATHOLOGICAL CHEMISTRY IN THE UNIVERSITY OF LONDON AT UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

II

In my first lecture I indicated the way in which different lines of research have contributed to the solution of the problems of the normal function of the thyroid, of the chemical nature of the specific constituent of its secretion, and finally of the ætiology of simple goitre, and I attempted to show that the main facts were explicable on a simple biochemical basis.

I wish now to consider the biochemistry of the thyroid itself in more detail, in order to try to arrive at some conclusion regarding the nature of the actual secretion of the gland, and finally to discuss briefly some points in connexion with the biochemistry of Graves's disease which constitutes the outstanding unsolved question of the pathology of the thyroid.

Iodine Compounds of the Thyroid

In the first place the question arises whether the only use to which the thyroid puts iodine is the synthesis of thyroxine or whether other organic iodine compounds also occur in the gland. It will be remembered that under the best conditions the amount of thyroxine which can actually be isolated represents only a small proportion of the iodine present in the original material. Having regard to the great chemical stability of thyroxine it is difficult to suppose that the smallness of the yield is due to destruction during the process of isolation, more especially since only a small proportion of the total iodine appears in the inorganic form. There is therefore a strong suggestion that organic iodine compounds other than thyroxine exist in the thyroid, and if we study the matter more closely we find that such is indeed the case.

After the preliminary hydrolysis of thyroid gland with dilute baryta which constitutes the first step in the isolation of thyroxine we find that the iodine may be divided sharply into two approximately equal fractions. Acidification of the alkaline solution after hydrolysis produces a precipitate; in this precipitate is contained the whole of the thyroxine of the original material, and in accordance with this the precipitate also contains the whole of the physiological activity. The filtrate however contains about half the total iodine, nearly all of which remains in organic combination. Concentration of this acid-soluble organic iodine fraction followed by more vigorous hydrolysis and subsequent purification by recognised methods leads to the isolation of a pure iodine-containing compound which turns out in fact to be 3:5-diiodotyrosine. Furthermore, a careful quantitative study of the isolation of thyroxine and diiodotyrosine indicates that these two compounds between them account for the whole of the iodine of the thyroid (Harington and Randall 1929 [1]).

The proof of the occurrence of diiodotyrosine in the thyroid evidently provides strong support for the hypothesis of the biological origin of thyroxine which was discussed in the previous lecture. At the

* The Oliver-Sharpey lectures for 1935, delivered before the Royal College of Physicians of London on March 26th and 28th. Lecture I. appeared in our last issue.

same time the fact that separation of the iodine into acid-soluble and acid-insoluble fractions by mild hydrolysis is accompanied by concentration of the physiological activity in the latter seems at first sight to indicate that diiodotyrosine makes no direct contribution to the active secretion. Facts are now available, however, which cast doubt on the correctness of this assumption.

Relation of Thyroxine to Total Physiological Activity of the Thyroid

Although there is no known physiological effect of the thyroid which cannot be qualitatively reproduced by thyroxine it is quite impossible to equate the physiological activity of a given sample of thyroid with that of the thyroxine which can be isolated from it or even with that of the maximum amount of thyroxine which it can contain on the basis of the acid-insoluble iodine. The physiological comparison of whole thyroid gland with thyroxine is admittedly difficult and inaccurate, since thyroid gland can only be administered by mouth while thyroxine is only fully effective when given by injection; the preparation of a degradation product of thyroglobulin which I shall shortly describe however has made it possible to surmount this difficulty in an indirect manner, and it is now perfectly clear that a loss of physiological activity is indeed involved in the process of isolation of thyroxine.

Such a loss of activity might be explained in various ways. As has already been pointed out, the great stability of thyroxine makes it unlikely that it has undergone any change in its molecular constitution during the process of isolation, so that it is unnecessary to assume that thyroxine represents an artificial transformation product of a more active precursor until all more probable explanations fail. One change will however undoubtedly have occurred during the isolation of thyroxine—namely, racemisation due to the alkaline hydrolysis employed. Since physiological activity is often profoundly influenced by stereochemical configuration the effect of this alteration on the physiological properties of thyroxine must first be considered. A decision on this point can be reached by the pharmacological comparison of the artificially prepared optically active forms of thyroxine, as a result of which it appears that *l*-thyroxine (which will subsequently be shown to be the naturally occurring form) is only some three times as active as *d*-thyroxine (Gaddum 1929–30). The most recently published results indicate indeed that the difference in activity between the two forms is even less than this, so that it is obvious that racemisation will not help us to explain the deficit of activity of thyroxine compared with that of the thyroid gland from which it is derived.

A line of investigation which has thrown some light on this problem is one which was designed primarily with the purpose of isolating optically active thyroxine.

It has already been mentioned that the earlier workers on the chemistry of the thyroid were unsuccessful in their attempts to isolate the active principle by enzymic hydrolysis of the gland. A renewed attack on the problem (Harington and Salter, 1930) showed however that under properly chosen conditions a far-reaching degradation of thyroglobulin could be effected by the aid of proteolytic enzymes without the simultaneous extensive liberation of iodine from its organic combination which had frustrated previous attempts. The main factor in the success which was finally attained was the use of large amounts of highly active preparations of the various enzymes, so that the time to which the material was exposed to the conditions of digestion was reduced to a minimum. The working up of the hydrolysis products was further facilitated by the fact that throughout the course of digestion the fraction containing thyroxine retained a characteristic isoelectric point, about pH 5, at which its solubility was low and at which therefore it could be separated by precipitation from the other products of hydrolysis.

By intensive digestion of thyroglobulin with pepsin, separation of the products insoluble at pH 5, and redigestion of these with trypsin, a degradation product could be obtained which contained about 15 per cent. of iodine. Subjection of this material to a succession of chemical fractionations which need not be discussed in detail but which involve no drastic treatment led eventually to a product from which a small amount of thyroxine could be separated. This thyroxine was lævorotatory, as had been anticipated from the fact already mentioned that *l*-thyroxine is the more active isomeride.

From our present point of view however the main interest of these experiments lies in the properties of the digestion product of thyroglobulin which was left in the mother-liquors from the final isolation of thyroxine. This material contained about 50 per cent. of iodine, all of which could be shown to be present in thyroxine; moreover, analyses of the iodine and nitrogen contents showed that all the thyroxine which was present must be in peptide combination with other amino-acids, which were estimated to be three or four in number.

This relatively simple thyroxine-containing material derived from natural sources has a range of solubility much greater than that of thyroxine itself, and is readily absorbed when given by mouth; on the other hand, owing to its reasonably low molecular weight, it can also be administered intravenously with safety. It can therefore be compared on the one hand with whole thyroid gland by the oral route and on the other with free thyroxine by the intravenous route. We have thus for the first time the possibility of obtaining an effective comparison between the real physiological activities of thyroxine and whole thyroid gland.

The results of comparison of the thyroxine peptide with free thyroxine show, as is to be expected, practical identity of action when the compounds are injected and an enormous difference of activity in favour of the peptide when both are given by mouth, the doses in all cases being calculated on the basis of equivalence in iodine.

When the peptide was compared with whole thyroid gland, both being administered orally, it appeared at first as if the peptide were definitely more active than the equivalent amount of thyroid, and I was myself persuaded at one time that this experiment explained the discrepancy under discussion. For if these results had been correct they would have meant that the activity of thyroxine in the peptide was enhanced as compared with that of the free compound by virtue of the very fact that it was in peptide combination. Even though the apparently superior activity of the peptide was not quantitatively great enough to account for the whole of the discrepancy, the general conception of the enhancement of the activity of thyroxine by combination with other amino-acids seemed adequate to account for the facts, for there was no reason to suppose that the properties of this particular peptide, obtained as it was by artificial digestion of thyroglobulin, represented the highest degree to which such enhancement of activity could attain in the actual secretion of the gland.

Work which has appeared since, however, has forced me to the conclusion that this hypothesis,

at least in the simple form outlined above, can no longer be maintained. The extensive and careful investigations of Salter have shown conclusively that the peptide has identical activities when given by mouth and by injection, and that, iodine for iodine, a dose of peptide by mouth is equivalent to one of thyroxine intravenously. On the other hand, the peptide and whole thyroid gland have practically identical physiological activities when given by mouth, the tests being made by the most accurate available method—namely, by the effects on the basal metabolic rate in human myxœdema (Salter, Lerman, and Means, 1933; Means, Lerman, and Salter, 1933). Since thyroid gland, as has already been shown, does not usually contain more than half its iodine in the form of thyroxine, it is evident that we are still left with a very serious discrepancy to explain.

Possible Nature of the Actual Secretion of the Thyroid

I am unable at the present time to offer an explanation of the difficulty which can claim any experimental support. I am, however, unwilling to accept the facile explanation of the loss of activity involved in the isolation of thyroxine which is based on the assumption that total destruction of an independent active principle is caused by the methods of isolation employed. Not only is there complete lack of positive evidence in favour of such an assumption, but all the knowledge which we possess of the chemical features responsible for the type of physiological activity exhibited by thyroxine indicates the intrinsic unlikelihood of the existence of a second unstable active principle. The matter seems to me sufficiently important to justify a little theoretical consideration, and I should like briefly to outline a hypothesis which seems to me to be adequate to cover the facts as at present known.

Until recently the generally accepted method of chemical assay of thyroid gland for therapeutic purposes consisted in estimation of the total iodine content, on the assumption that all of this iodine was involved in the active principle. When it was shown by the work which I have described that in actual fact only a part, and a somewhat variable part at that, of the total iodine represented thyroxine, the remainder being present in the form of the physiologically inactive diiodotyrosine, it seemed reasonable to base the chemical assay of thyroid gland on its content of thyroxine-iodine rather than of total iodine. A method based on this principle, for which I regret to say I am myself largely responsible (Harington and Randall, 1929 [2]), has been adopted in the new British Pharmacopœia; in this the preparation of thyroid is standardised to contain a certain amount of iodine which is insoluble at pH 5 after preliminary alkaline hydrolysis, and which may therefore be taken to represent thyroxine. Now it was shown by Gaddum and Hetherington (1931) that the physiological activities of various preparations of thyroid did not in fact run strictly parallel with their thyroxine-iodine contents; furthermore, carefully conducted recent work, particularly that of Salter already referred to, seems to show that the activity of any given preparation of thyroid is determined after all by its total iodine content, and that therefore the original method of assay by total iodine content was fundamentally correct.

If this is indeed the case, and if we accept the experimental results which I have described and which show (*a*) that the whole of the iodine of the thyroid can be accounted for between thyroxine and diiodotyrosine, and (*b*) that after preliminary mild hydrolysis the whole of the physiological activity is concentrated in the thyroxine-containing fraction, we are forced to the conclusion that this mild hydrolysis has effected some change as a result of which proportionality has ceased to exist between total iodine and physiological activity; we must further assume that, in so far as the whole gland is concerned, the diiodotyrosine fraction must contribute to the activity, although when separated this fraction is entirely inactive.

I can conceive of only one explanation which will fit these facts—namely, that the molecule of the complete active secretion of the thyroid contains both thyroxine and diiodotyrosine and that some linkage between these two is ruptured during the hydrolysis which is a necessary initial stage in the isolation of thyroxine. As a result of such a rupture it would not be surprising to find residual physiological activity confined to that fraction which contains the more highly specific and characteristic constituent—namely, thyroxine.

I do not suggest that the linkage between thyroxine and diiodotyrosine is direct; indeed I am fairly certain that it is not so, for, having with some difficulty synthesised both thyroxyldiiodotyrosine and diiodotyrosylthyroxine, I have been surprised and somewhat disappointed to find that both these peptides are less active than thyroxine itself. This negative result however does not mean anything, for it is possible and indeed likely that in the active secretion the iodine-containing amino-acids are united through an intermediate chain of ordinary amino-acids. Experiments bearing on this point are in progress in my laboratory at the present time and in the meanwhile the whole conception must remain entirely hypothetical. I feel, however, that it does afford a reasonable explanation of the two main difficulties with which we are still faced in connexion with the normal biochemistry of the thyroid—that is, the loss of activity involved in the isolation of thyroxine and the fact that the activity of the whole gland is proportional to the total iodine and not to the thyroxine which it contains.

If we may for the moment assume the truth of the idea which I have advanced we may now form a connected picture of the normal series of events in the thyroid gland. It is well known that the thyroid possesses a very strong affinity for iodine and that any of this element which finds its way into the blood stream is rapidly concentrated in the gland. It may be supposed that the iodine which reaches the thyroid is first introduced into the molecule of tyrosine to form 3 : 5-diiodotyrosine. The latter will then fulfil a dual rôle; part of it will be converted into thyroxine by a process the nature of which I have indicated and another part will be linked with the thyroxine so formed together with other amino-acids to form the true active principle of the gland. This active principle will then in turn be built up into the molecule of thyroglobulin and stored as such in the form of the colloid until it is released in accordance with the metabolic demands of the body.

Constitutional Factors in Relation to Activity of Thyroxine and Allied Compounds

Before finally leaving the question of the chemistry of thyroxine it may be of interest to discuss briefly the chemical features of the thyroxine molecule which appear to be of significance for its specific physiological activity, particularly since these considerations have a bearing on certain theories of Graves's disease which have to be discussed later.

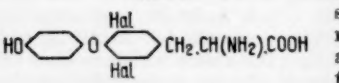
The most obvious chemical characteristics of the

molecule of thyroxine are the presence of the *o*-diiodophénolic group and of the phenylether linkage. Neither of these groupings alone however is sufficient to confer thyroxine-like activity upon a compound as is shown by the total absence of such activity from diiodotyrosine and α-amino-β-di (3 : 5-diiodo-4-hydroxyphenyl) propionic acid on the one hand and from thyronine on the other. The aminopropionic acid side-chain seems to be necessary, since such compounds as thyroxamine (decarboxylated thyroxine) are devoid of activity. The full complement of iodine is not necessary for the qualitative development of the characteristic physiological activity, since 3 : 5-diiodothyronine will produce a rise in the basal metabolic rate equivalent to that produced by about 1/40 of its weight of thyroxine (Gaddum, 1929–30). 3 : 5-Diiodothyronine has indeed considerable therapeutic possibilities; it is a much more soluble compound than thyroxine and is readily absorbed when given by mouth; in appropriate doses it produces a marked rise in metabolic rate without any tendency to cause disturbances such as sometimes accompany medication with thyroxine or thyroid gland, and it possesses the obvious advantage over thyroid gland that the dose can be controlled with absolute precision (Anderson, Lyon, and Harington, 1933).

Strangely enough iodine itself may be replaced by another halogen without total loss of physiological activity; 3 : 5 : 3′ : 5′-tetrabromothyronine, the bromine analogue of thyroxine, exhibits the characteristic physiological activity of the latter, although naturally in a very much lower degree. This suggests the possibility of an entertaining experiment; it would be interesting to see whether an animal with a hyperplastic thyroid resulting from elimination of iodine from the diet would respond to administration of bromine by involution of the gland with accompanying synthesis of tetrabromothyronine in place of thyroxine.

It will be apparent that in this as in so many other fields the attempt to relate chemical constitution with physiological activity does not meet with any great measure of success; all that can be said with certainty is that obligatory requirements for the development of thyroid-like activity are the presence of the thyronine nucleus and the substitution of this nucleus with halogen atoms at least in the 3 : 5-positions (Fig. 4). It is however to be noted that no change in the molecule of thyroxine has done anything but diminish physiological activity and that no such change has caused the development of any toxic properties.

FIG. 4



Biochemical Basis of Graves's Disease

I now come to the last and most difficult subject with which I have to deal—namely, the biochemistry of Graves's disease. I approach this with diffidence, for it is disappointing to realise how little the great advances which have been made in the study of the biochemistry of the normal thyroid and of simple goitre help towards an understanding or towards treatment of the most serious disorder to which the gland is subject.

The information to be gained from the morphological or chemical examination of the thyroid itself in Graves's disease is not very great, since with equal severity of symptoms great variations both in the gross size and in the histology of the gland may be found. In general however, unless the patient has been treated with iodine, the amount of colloid is diminished and such colloid as is present is abnormal in appearance and consistency. There is always more or less hyperplasia of the glandular epithelium. As we should expect from these appearances the iodine content of the gland is low.

The morphological appearance of the thyroid in Graves's disease is similar to that of a thyroid which has undergone hyperplasia in a normal animal as the result of restriction of iodine and the Graves's disease thyroid responds to administration of iodine in a similar manner—namely, by involution with storage of colloid. The fundamental difference which distinguishes the thyroid in Graves's disease from that in the normal organism is the greatly increased rate at which the former pours out its secretion. Administration of iodine to an animal with a hyperplastic thyroid resulting from iodine deficiency causes at most a slight and temporary increase in the rate of secretion of the gland; in Graves's disease on the other hand the physical changes of involution and colloid storage which occur in response to iodine administration are accompanied by a period of restricted secretion followed by subsequent release of the active principle at as great a rate as ever, although the appearance of the gland may be relatively normal. It seems then that the thyroid in Graves's disease is suffering, as Kocher (1910) expressed it, from a "diarrhœa" in which the gland retains its natural avidity for iodine—and even its capacity for storing iodine if sufficient be supplied—but is forced, as soon as the iodine has been converted into the physiologically active secretion, to pour the latter out. The cause of the "diarrhœa" may be an intrinsic abnormality of the thyroid itself, or it may be the action of an extrinsic stimulus; since the gland still possesses its storage capacity for iodine the latter alternative seems the more likely.

Iodine Therapy in Graves's Disease

Since Graves's disease is always associated with more or less enlargement of the thyroid and since other forms of goitre had been successfully treated by administration of iodine it is not surprising that attempts were made from time to time to treat Graves's disease in the same manner. The results of such attempts were however very variable; they were occasionally reported as favourable but more often as disastrous, and the general attitude until recent years was that expressed by Trousseau (1867–73) in describing a favourable result which he had himself obtained by the accidental prescription of iodine; in general he regarded iodine as a most dangerous drug to use in Graves's disease. This point of view became profoundly modified as the result of the work of Plummer at the Mayo Clinic (Plummer and Boothby, 1924; Boothby, 1924) some ten to fifteen years ago, which indicated that striking, if temporary, improvement could be effected in patients suffering from severe Graves's disease by the administration of large amounts of iodine, and that such treatment was of great value at least as a pre-operative measure.

Now the revival of iodine therapy in Graves's disease introduced by Plummer was based upon certain theoretical considerations which had first been raised by Möbius (1896) 25 years earlier. Möbius, whilst convinced that Graves's disease was the result of abnormal activity of the thyroid, inclined to the view that this abnormal activity consisted in the production of an abnormal toxic

secretion rather than in simple hyperactivity; in other words, dysthyroidism would be a better description of the condition than hyperthyroidism. Plummer defined this hypothesis more narrowly by making the additional assumption that the toxic secretion in Graves's disease was a modification of the normal secretion deficient in iodine; on this idea was based the hope that administration of excess of iodine might convert a toxic dysthyroidism into a less dangerous straightforward hyperthyroidism.

The undoubted success which can often be obtained in the treatment of Graves's disease by Plummer's method appears at first sight to afford confirmation of his theory, but a more detailed examination of the evidence leads to a different conclusion. In order to establish the theoretical basis of Plummer's hypothesis it is necessary to demonstrate a clear difference between the symptoms arising from Graves's disease ("dysthyroidism") and those arising from other forms of hyperthyroidism ("adenomatous goitre" or "toxic adenoma") and this demonstration is not easy to make. It is perfectly clear that the major symptoms of Graves's disease—namely, increased basal metabolic rate, loss of weight, tachycardia, nervous disturbances—could quite well be accounted for by simple hyperthyroidism and have in fact been known to be associated with excessive administration of thyroid ever since the introduction of replacement therapy in myxœdema; moreover, these symptoms occur also in "adenomatous goitre with hyperthyroidism." There is left the symptom of exophthalmos which is usually characteristic of human Graves's disease, but this scarcely seems a sufficient basis for the qualitative differentiation of Graves's disease from other forms of hyperthyroidism with which it has so much in common. Moreover, it appears from recent work that even this symptom can be produced experimentally in animals by a method which involves stimulation of the thyroid to continued hyperactivity.

The symptoms arising from adenomatous goitre are not influenced or are only influenced to a relatively small extent by iodine medication, and this fact has also been adduced in support of the qualitative differentiation of Graves's disease from other forms of hyperthyroidism; the argument is fallacious however, since it is well known from the work of Marine (1913) that thyroid adenomata, which are of unknown origin but must be regarded as functioning thyroid tissue, differ quantitatively from ordinary thyroid tissue in being much less responsive to variations in exogenous iodine supply; it cannot therefore be expected that a hyperplastic thyroid containing these growths should respond to iodine in the same way as a hyperplastic thyroid free from adenomata such as is found in Graves's disease.

It appears to me therefore that there is little support either on the ground of symptomatology or on that of therapeutic observations for the assumption of a qualitative difference between Graves's disease and straightforward hyperthyroidism. Moreover, the dysthyroidism theory is open to serious positive criticisms. The beneficial effect of iodine therapy in Graves's disease is limited in duration, usually to about three weeks; if Plummer's modification of the theory were correct there should be no such limitation.

It should be possible to demonstrate experimentally the presence of a toxic principle in the glands removed from patients suffering from Graves's disease; all attempts to do so have failed. Indeed, as is to be expected, the more severe the disease the greater is the degree of glandular hyperplasia and the less iodine is contained in the thyroid; in such cases the gland material is practically devoid of physiological activity.

Finally, as has been pointed out, no derivative of the normal active principle containing less than the full complement of iodine has been found to approximate quantitatively in activity to thyroxine or to possess any toxic properties whatever.

In view of the lack of positive support of the dysthyroidism theory of Graves's disease, and in consideration also of the serious criticisms which can be advanced against it, I feel some confidence therefore in dismissing the hypothesis as an unnecessary complication and in holding to the simpler assumption that all the symptoms of the disease may be regarded as manifestations of the presence in the body of excess of the normal active principle of the thyroid; furthermore, it seems to me to be fairly certain that the over-production of the active principle is due to the action of an extrinsic factor upon the thyroid. If these assumptions are to be justified however some explanation must be given (*a*) of the temporarily beneficial effect of iodine therapy, and (*b*) of the nature of the extrinsic factor which causes the thyroid "diarrhœa." Neither of these questions can be fully answered at the present time, but in both cases it is possible to make suggestions which may be worth consideration.

First of all, in connexion with iodine therapy, the most significant fact seems to be that the beneficial effect, although often dramatic, is only temporary; as a general rule the maximum improvement as indicated by diminution of the basal metabolic rate is obtained after about three weeks; thereafter the good effect gradually wears off and there is little evidence that any permanent benefit can be conferred by continued iodine medication alone. Moreover, intermittent iodine medication in Graves's disease is a definitely dangerous procedure, since there is evidence that resumption of iodine administration after an intermission may produce an acute exacerbation of symptoms. It is a matter of indifference in what form the iodine is given apart from the risk of producing iodism by the administration of large doses of inorganic iodine, a risk which may easily be avoided by giving the iodine in the form of diiodotyrosine. (This method has the theoretical advantage that the iodine is supplied in the form in which it is required by the thyroid and the practical advantage that much smaller doses of iodine are required.) In whatever form iodine is given it has precisely the same effect upon the gland—namely, that which is characteristic of the action of iodine on a thyroid which has undergone hyperplasia from any cause whatever. There is involution of the glandular hyperplasia and storage of colloid and these processes take place with great rapidity. It is this rapidity of effect which suggests a possible explanation of the favourable action of iodine in the early stages of its administration; the rapid swelling and hardening of the gland owing to colloid storage under iodine medication are often physically evident, and it has been suggested by Marine that it is this acute distension of the gland which causes an inhibition of outpouring of secretion, since the pressure set up prevents the secretion from obtaining access to the lymphatics in the ordinary way. Such a mechanical conception certainly accounts for the temporary nature of the effect, for as soon as the structural elements of the gland have been able to adjust themselves to the altered conditions the secretion will no longer be mechanically retained and the rate at which it is poured out will gradually

increase until it reaches the level determined by the stimulus which is working on the gland—a state of affairs which is in entire accordance with the observed facts.

Whether this be the correct explanation of the action of iodine in Graves's disease or not it is of the greatest importance, in my opinion, that the temporary nature of the effect should be fully realised. Moreover, not only is the effect temporary but it cannot be elicited to the same extent a second time even after a long interval. The real justification of iodine therapy in Graves's disease is its value as pre-operative treatment; the attempt to use it for prolonged and unaided medical treatment is not only, according to all the evidence, foredoomed to failure, but means the loss of an opportunity to put the patient into the most favourable condition for operation. Surgical treatment of Graves's disease has indeed no basis in reason, and is at best a palliative measure; in the present state of ignorance however it seems to be the most effective way of dealing with the situation, and it appears to me unfortunate that iodine therapy should be sometimes regarded as a rival of surgical treatment when it should in reality be its ally.

Possible Extrinsic Factor in Graves's Disease

It remains finally to consider what may be the nature of the extrinsic stimulus producing the "diarrhœa" of the thyroid gland which we have concluded to be the essential feature of Graves's disease. From the welter of unrelated and ill-digested observations on the relations of the thyroid with other endocrine organs two facts stand out clearly. The first is the inhibitory effect upon the thyroid of the suprarenal cortex and the second the stimulating effect upon the thyroid of the anterior pituitary.

The first of these effects manifests itself normally in the increase of heat-production of a child which coincides with the involution of the suprarenal cortex occurring a few days after birth (Lewis and Pappenheimer, 1916; Marine, 1922); it has also been shown experimentally by Marine and Baumann (1921) and others that severe injury to the suprarenal cortex will cause an increase of heat production so long as the thyroid is intact, but not after thyroidectomy. The relationship of these facts to Graves's disease however, if indeed such a relationship exists, has not been established. No lesion of the suprarenal cortex in Graves's disease has been observed nor have the few good results at first claimed by Marine in the treatment of patients with Graves's disease with suprarenal cortical extracts been confirmed. The suprarenal cortex-thyroid relationship does not therefore take us far in the direction in which we wish to go.

It is possible that the anterior pituitary-thyroid relationship is more significant. Whilst it has long been recognised in a rather vague manner that the thyroid and pituitary are related, it is only in the last few years that it has been shown clearly that among the numerous hormones elaborated by the anterior pituitary is one which has the specific property of stimulating the thyroid to hypertrophy (Loeb and Bassett, 1929; Closs, Loeb, and Mackay, 1932; Krogh, Lindberg, and Okkels, 1932). The changes induced in the thyroid by the action of this thyrotropic hormone are precisely similar on the one hand to those produced in a normal animal by restriction of iodine intake and on the other to those which occur in Graves's disease. That is to say there is hypertrophy of the gland due to hyperplasia of the epithelium accompanied by loss of colloid and of iodine. Moreover, these changes are accompanied by physiological manifestations of hyperthyroidism; indeed, there is no symptom associated with hyperthyroidism which cannot be produced by administration of thyrotropic hormone and it even appears that with the aid of this substance the experimental production of exophthalmos in animals has become possible (Schockaert, 1932; Loeb and Friedman, 1932).

Since the thyrotropic hormone is able to elicit these effects in presence of a supply of exogenous iodine which is normally adequate, it is evidently causing a "thyroid diarrhœa" analogous to that which has been postulated as the essential feature of Graves's disease; it is tempting therefore to suppose that the anterior pituitary plays a rôle in the disease as it is seen in human beings. Here again, however, objective evidence in favour of such a supposition is entirely lacking, and in the present state of knowledge I believe it to be unjustifiable to make an assumption of this sort. One of the most remarkable discoveries in connexion with the thyrotropic hormone is that due to Collip (Anderson and Collip, 1934)—namely, the possibility of producing an antiserum by prolonged treatment of an animal with thyrotropic hormone which will antagonise the effects of the latter. It seems scarcely conceivable that this antiserum owes its effect to the production of a true antibody in the immunological sense, since the occurrence of such an antibody would be a negation of the power of the thyrotropic hormone to continue its action in the normal organism. It is, on the other hand, just possible that the antiserum contains an antagonistic principle elicited from another source—e.g., the suprarenal cortex—and that its production is thus a manifestation of a balance between two organs of internal secretion having opposing effects on the thyroid.

This somewhat complicated hypothesis is entirely without experimental support; I put it forward only to indicate my opinion that although the thyrotropic hormone has been shown to be a potential causative agent of Graves's disease, it is extremely unlikely that anything so simple as the over-production of this hormone can account for the condition. It appears to me unquestionable that the problem of the ætiology of Graves's disease involves complexities which are as yet unsuspected; it is permissible to hope however that these complexities may ultimately be unravelled by physiological and biochemical investigations such as those now being conducted in connexion with the thyrotropic hormone, and that finally it may be possible to discuss the biochemical basis of Graves's disease with as much confidence as we can now discuss the biochemical basis of normal thyroid function.

REFERENCES

Anderson, A. B., Harington, C. R., and Lyon, D. M.: THE LANCET, 1933, ii., 1081.
Anderson, E. M., and Collip, J. B.: Jour. of Physiol., 1934, lxxxii., 11.
Boothby, W. M.: Endocrinology, 1924, viii., 727.
Closs, K., Loeb, L., and Mackay, E. M.: Jour. Biol. Chem., 1932, xcvi., 585.
Gaddum, J. H.: Jour. of Physiol., 1930, lxvii., 383.
Gaddum, J. H., and Hetherington, M.: Quart. Jour. Pharm. and Pharmacol., 1931, iv., 183.
Harington, C. R., and Randall, S. S.: Biochem. Jour., 1929, xxiii., 373 (1); Quart. Jour. Pharm. and Pharmacol., 1929, ii., 501 (2).
Harington, C. R., and Salter, W. T.: Biochem. Jour., 1930, xxiv., 456.
Kocher, M.: Arch. f. klin. Chir., 1910, xcii., 1166.
Krogh, A. L., Lindberg, H., and Okkels, T.: Acta Path. Microbiol. Scand., 1932, ix., 37.
Lewis, R. W., and Pappenheimer, A. M.: Jour. Med. Research, 1916, xxxiv., 81.
Loeb, L., and Bassett, R. B.: Proc. Soc. Exp. Biol. Med., 1929, xxvi., 860.
Loeb, L., and Friedman, H.: Ibid., 1932, xxix., 648.

(*References continued at foot of opposite page*)

PHOSPHATASE IN FRACTURES

BY E. H. BOTTERELL, M.D. Manitoba
FELLOW IN SURGERY, UNIVERSITY OF TORONTO; AND

E. J. KING, Ph.D. Toronto
FORMERLY ASSISTANT PROFESSOR OF MEDICAL RESEARCH AT THE UNIVERSITY *

(From the Department of Surgery and the Department of Medical Research, University of Toronto, Canada)

THIS investigation was undertaken in order to evaluate the part played by the bone enzyme, phosphatase, in the repair of fractures. Robison [1] has shown that the phosphatase mechanism plays an important part in the calcification of bone, and that in the ossification of the skeleton the enzyme is found only with the appearance of hypertrophic cartilage cells and osteoblasts. The presence of the enzyme results in the liberation of free phosphate, due to the hydrolysis of the organically bound phosphoric acid of the plasma. There is a consequent local increase in the concentration of phosphate ion which results in a super-saturation with respect to calcium phosphate of the fluid bathing the matrix of the bone. A second mechanism, not fully understood, appears to favour the deposition of the bone salt from the super-saturated solution.

The problem was approached with the object of finding (1) if the phosphatase content of the bone and callus in the region of a fracture is higher than that of the corresponding normal bone; (2) if the phosphatase content is raised, can it be related to the increase in the number of osteoblasts and hypertrophied cartilage cells in the callus; (3) if there is any increase in the phosphatase of the blood-serum, at the same time as repair of the fracture is occurring (McKeown and Ostergren) [2]; (4) if the introduction of a potent preparation of phosphatase into the fractured area would cause any change in the calcification of the callus or in the histological picture.

A series of experiments was carried out using uniform transverse fractures in the radii of rabbits. Serum phosphatase and bone phosphatase estimations were made at appropriate intervals.

Experimental Methods

Technique of producing experimental fractures.—The rabbit was operated on under ether anæsthesia. An incision was made over the middle of the right radius where it is subcutaneous. The muscles were separated from the shaft of the bone. By means of an Albee motor saw the radius was sawn through, leaving the ulna as a natural splint. The skin was closed with silk. Aseptic precautions were used. This technique was followed uniformly throughout on one or both sides, and with or without the introduction of phosphatase, as the experiment required.

Technique of preparing bone for estimation of phosphatase and histological examination.—The rabbits were killed by a blow on the back of the head. By careful dissection the bones of the fore-legs were denuded of soft tissues. The fractured radius was cut across so that a segment was obtained which extended half an inch proximal and half an inch distal to the site of fracture. A corresponding segment was prepared from the normal radius when required. These segments were cut longitudinally with a fine fret-saw. One half was used for the estimation of phosphatase; the other half was fixed in formalin, decalcified, and stained for histological study.

Phosphatase estimation.—The half segment of radius was carefully weighed and ground. It was then extracted with fifty times its weight of water for 48 hours. A few drops of chloroform were added as a preservative. The turbid extract was filtered through a plug of cotton-wool and the phosphatase content of the filtrate determined by the phenyl phosphate method of King and Armstrong.[3]

Phenylphosphate is a more suitable substrate than the glycerophosphate previously used for the determination of phosphatase; it is hydrolysed much more rapidly and the liberated phenol is more conveniently determined than the phosphate (three times as much phenol as phosphorus by weight is hydrolysed). The method is easily and quickly carried out and is suitable for the clinical laboratory. Duplicate determinations can be completed in 1 hour.

Duplicate samples of 0·5 c.cm. of bone extract or of serum are added to 10 c.cm. M/200 phenylphosphate in M/20 veronal (1·09 g. di-sodium phenylphosphate and 10·3 g. sodium veronal in 1 litre). The tests are maintained at 37° C. for 30 minutes. The enzyme action is stopped and the proteins precipitated by the addition of 4·5 c.cm. of a 1 : 3 dilution of Folin-Ciocalteu's [4] phosphotungstic-phosphomolybdic acid phenol reagent. Duplicate controls are made in the same way, but the enzyme action is stopped immediately by the addition of the phenol reagent. The mixtures are filtered. 10 c.cm. filtrate are treated with 2·5 c.cm. 20 per cent. Na_2CO_3 to bring up the blue colour due to free phenol. Colorimetric comparison is made with an 0·1 mg. phenol standard. The increase in free phenol is taken as a measure of the amount of enzyme present. The results are expressed in terms of the mg. phenol which would be hydrolysed by 1 g. of bone (i.e., by 50 c.cm. of extract) or by 100 c.cm. of serum. Each mg. of phenol liberated is considered the equivalent of 1 "unit" of phosphatase.

Technique of preparation of phosphatase powder.—The phosphatase preparation which was introduced into the site of fracture was prepared according to the method of Martland and Robison.[5] The phosphatase was finally suspended in absolute alcohol. This was removed in a vacuum desiccator at room temperature. The dry powder was tested for phosphatase activity and sterility.

The Experiments

Group 1.—In order to study the phosphatase content of bone during the process of repair the right radius was fractured in 23 fully grown rabbits. The rabbits were killed at intervals up to 73 days, and the phosphatase content of the fractured area of the right radius was compared with the phosphatase content of the corresponding area of the normal left radius. In two rabbits the specimens were discarded on account of the formation of an abscess at the site of operation. In each of the 21 remaining animals the phosphatase content of the fractured radius was higher than that of the control radius (see Chart 1). This increase was seen as early as

* Now reader in biochemistry at the British Post-graduate Medical School, University of London.

(*Continued from previous page*)

Marine, D.: Jour. Med. Research, 1913, xxvii., 229; Physiol. Rev., 1922, ii., 521.
Marine, D., and Baumann, E. J.: Amer. Jour. Physiol., 1921, lix., 353.
Means, J. H., Lerman, J., and Salter, W. T.: Jour. Clin. Invest., 1933, xii., 683.
Möbius, P. J.: In Nothnagel's Specielle Pathologie und Therapie, Vienna, 1896, vol. xxii.
Plummer, H. S., and Boothby, W. M.: Amer. Jour. Physiol., 1924, lv., 295.
Salter, W. T., Lerman, J., and Means J. H.: Jour. Clin. Invest., 1933, xii., 327.
Schockaert, J. A.: Amer. Jour. Anat., 1932, xlix., 379.
Trousseau, A.: Lectures on Clinical Medicine, New Sydenham Soc., 1867–73.

the fourth day after fracture. From the results of this series of animals it would appear that there is an increase of phosphatase at the site of fracture for at least 50 days.

Group 2.—Transverse fractures were produced in both the right and left radii of six rabbits. These animals were killed over a period of 22 days. A definite rise occurred in the phosphatase content of both radii. An approximate similarity was found in the increase of phosphatase at both sites of fracture in the same animal.

TABLE I

Bone Phosphatase in Fractures (both Radii Fractured)

Days.	Left radius.	Right radius.
1	0·6	0·8
5	0·8	1·0
8	10·3	7·4
13	9·0	7·0
15	15·4	15·7
22	19·2	17·1

Group 3.—Transverse fractures were produced in both radii of 27 rabbits. About 5 mg. of phosphatase, representing approximately 3 units, were introduced into the fracture of the right radius at the time of operation. This amount was about four times as much as that usually found in a segment of normal radius. The powder used at each operation was found to be sterile, both by smear and culture, but in four cases sterile abscesses developed.

As is seen in Chart 2, there was a marked rise in the phosphatase content of both fractured radii. The quantities of phosphatase found did not differ materially in the treated and untreated fractures. It would appear that either the phosphatase was removed rapidly from the site of its introduction (by being carried away in the blood stream or by being destroyed in situ), or its presence may have militated against the production of phosphatase by the normal mechanisms. This latter possibility could well be due to the presence of considerable amounts of denatured protein in the phosphatase preparation, although the material used had been purified to the greatest possible extent and was of as high enzymic potency as any previously prepared.

SERUM PHOSPHATASE

The phosphatase of the serum was estimated at intervals in a number of rabbits in all three groups.

Group 1.—The level of the serum phosphatase was investigated following the operation in 12 of the 23 rabbits. Estimations were made at weekly intervals up to 10 weeks post-operatively, on a decreasing number of animals. Neither any consistent increases nor, in fact, any significant changes were demonstrated. One animal showed abnormally high readings throughout, and a second animal had a terminal rise in the seventh, eighth, and ninth weeks.

In *Group 2* the serum phosphatase remained normal in the 6 rabbits throughout the experiment.

In *Group 3* the serum phosphatase was done at weekly intervals for four weeks. All estimations were normal and further estimations were not done.

Thus it would appear that there is no significant rise in the level of serum phosphatase in rabbits following fractures of one or both radii; nor was any rise demonstrated following the introduction of phosphatase at the site of fracture.

HISTOLOGICAL EXAMINATION

Of the segment of bone removed from the site of fracture as described above, half was used for the estimation of phosphatase and half was studied histologically. In the preparation of the bone for phosphatase estimations it was necessary to remove the soft tissues. There occurred, therefore, the loss of variable amounts of periosteum and some osteoid tissue. This fact rendered difficult the histological interpretation of some of the sections. We are indebted to Dr. A. W. Ham, of the department of anatomy, for his careful study of the sections, which was made independent of any knowledge of the changes in phosphatase activity or of the duration of the fracture. Twelve fractures with the introduction of phosphatase, and 34 uncomplicated fractures, were examined histologically.

In the majority of the sections examined a small amount of foreign material was present. This was due to bone dust formed as a result of using a motor saw. There were practically no foreign body reactions.

Hypertrophic cartilage cells were seen in sections of bone removed soon after fracture. These cells persisted and formed a prominent feature in the histological picture, along with osteoblastic activity and matrix formation, until the sixth week when they diminished. Osteoblastic activity and the formation of bone matrix persisted for a further three or four weeks. The phosphatase content of the bone remained at its previous high level for some three weeks after the diminution in hypertrophic cartilage cells was evident. The phosphatase found at this stage may be taken to represent production due to the continued osteoblastic activity.

In every instance where osteoblastic activity and matrix production were high there was a high degree of phosphatase activity in the other half of the segment of bone. In no specimen was a high phosphatase content recorded in the absence of hypertrophic cartilage cells, or osteoblastic activity and the formation of a matrix.

In the group of rabbits where phosphatase was introduced into the fracture, three died and three were killed during the ten days following operation. No histological sections were available from the segments of bone removed from these six animals.

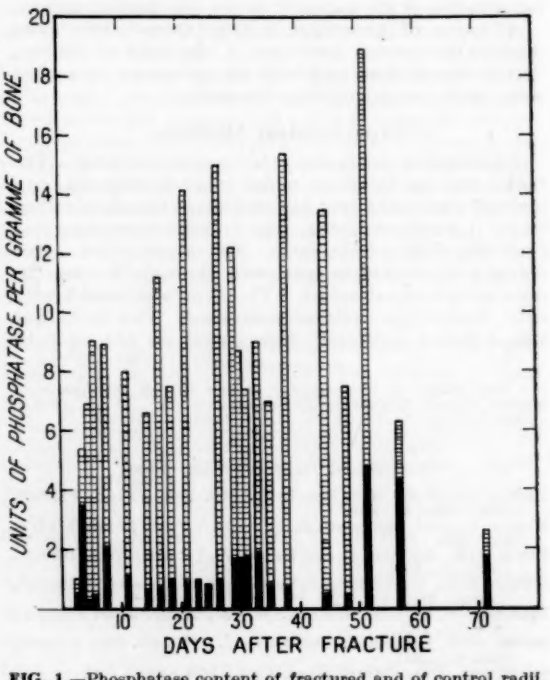


FIG. 1.—Phosphatase content of fractured and of control radii. Hatched column represents amount of enzyme in fractured segments; blackened column, amount in control segments.

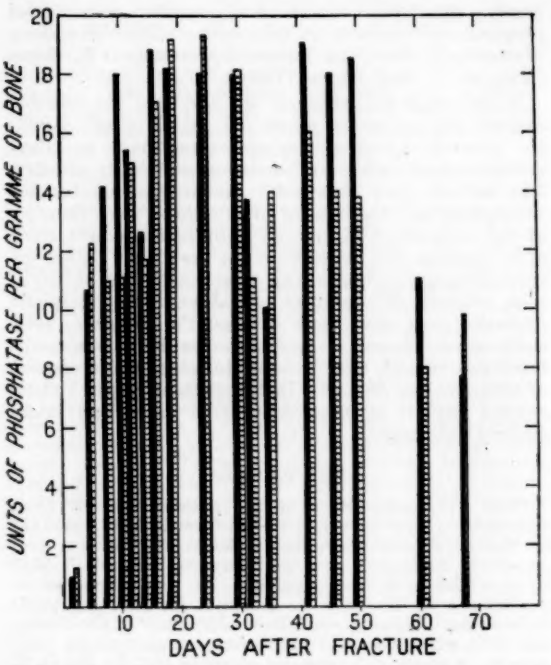


FIG. 2.—Phosphatase content of fractured radii. Hatched column, fracture of right radius with the introduction of phosphatase: blackened column, fracture of left radius (without introduction of phosphatase).

The gross appearance, which included œdema and congestion of soft tissues and the presence of some white pasty material at the site of fracture, suggested a non-suppurative inflammatory process. Sections were taken from the fractured radii of 12 rabbits killed from 10 to 67 days after operation. Examination failed to reveal any difference in the gross or histological evidence of repair, as seen in the fractures into which phosphatase had been introduced and the control fractures on the opposite legs. No evidence of the presence of the phosphatase powder could be found. No foreign body reactions were apparent.

Serum and Bone Phosphatase in Human Cases

At the same time as the animal experiments were under way, the level of serum phosphatase was investigated in a group of patients admitted to the fracture service of the Toronto General Hospital. Estimations of the phosphatase content of bone from the region of the fracture were carried out whenever possible. In two cases a sufficient amount of the hæmatoma at the site of fracture was obtained to allow of determination of the phosphatase content. The results of the serum phosphatase readings in this group of patients have been classified according to age, and according to whether bony union developed. A separate group was established for pathological fractures. Serum phosphatase is normally higher in persons under 21 years of age. The average range is from 15–20 units per 100 c.cm. of blood for the ages from 12 to 20 years. In adults the average range is from 5–10 units. These facts must be borne in mind in considering the level of serum phosphatase readings in this group of patients.

Closed fractures with bony union in patients from 15 to 21 years of age.—In a group of five patients four showed a series of normal serum phosphatase readings. One case only showed evidence of a rise in serum phosphatase. This patient (a boy of 18 years) suffered a fracture separation of the lower epiphysis of the femur. The serum phosphatase shortly after admission was 14·3 units. It rose to 32 units in three weeks and then gradually fell. As at this age the growth of the femur is not complete and the epiphysis has not yet united, the phosphatase content of the bone at this site would normally be high. 30 c.cm. of hæmatoma fluid aspirated at the time of injury contained the large amount of phosphatase of 30 units per 100 c.cm.

Fractures in patients over 21 years of age which resulted in bony union.—The group comprised 21 patients. Five of the cases required operative measures for purposes of reduction and fixation. Serum phosphatase determinations were carried out up to 12 weeks after the time of the fracture. In two cases there was evidence of a slight increase in serum phosphatase. The highest reading obtained was 17·2 units, so that the increase is of doubtful significance. A portion of the organising hæmatoma from between the fragments of a fractured olecranon, two days after the injury, showed 0·51 unit per gramme (about 50 units per 100 c.cm.).

Fractures resulting in non-union.—One case of non-union was studied in a patient below 21 years of age. Five months of immobilisation of the compound fracture of the humerus in this boy of 15 had failed to result in union. The serum phosphatase was about 25 units prior to operation and ranged from 25–30 units for the six weeks following a successful bone graft. In three cases of fracture of the neck of the femur in adults which resulted in non-union the serum phosphatase remained within normal limits.

TABLE II

Normal Ribs removed during Thoracoplasty for Pulmonary Tuberculosis, after Reflection of the Periosteum

	Units per gramme
A	4·1
B	6·1
C	8·3

Bone following Fracture

Case.	Age in years.	Material used.	Units per gramme.
D.	33	Rarefied vascularised bone from distal fragment of tibia six weeks after Pott's fracture.	3·07
E.	51	Bone from fractured second cuneiform of foot, 2 weeks following injury.	4·3
F.	50	Re-fracture of shaft of femur 4 months after old fracture bone from end of fragment.	8·6
G.	64	Non-union of fractured neck of femur, with aseptic necrosis of head of femur: bone from head.	0·88
H.	35	Fibrous union of fracture of neck of metatarsal bone 4 months after injury; bone from end of shaft of metatarsal.	5·80
I.	15	Non-union following fracture of shaft of humerus. Microscopic exam. showed normal response with viable bone; interposition of soft tissues between fragments.	16·41

Pathological fractures in patients with disease of bone.—In two cases of fragilitas ossium there was no deviation from the normal. In one case of a fracture of the femur complicating Paget's disease, the serum phosphatase was 35 and 25 units at three month intervals. One case of generalised osteitis fibrosa

cystica suffered fractures of the femur and humerus. Serum phosphatase readings varied between 60 and 125 units during the course of 12 weeks.

PHOSPHATASE CONTENT OF HUMAN BONE

In Table II are recorded the phosphatase contents of some specimens of human bone which were obtained at operation. Two points of interest are brought out in this Table: one is the variation in the phosphatase content of three normal ribs; the second is the contrast afforded by the low phosphatase content (Case G.) of the head of the femur, which has undergone aseptic necrosis, as compared to the high phosphatase content of the fracture of the humerus (I.) with non-union owing to mechanical causes.

Summary

1. The phosphatase content of callus and bone in the region of healing fractures, produced experimentally in rabbits, was higher than that of normal bone. This increase persisted for 50 or 60 days.

2. The increased phosphatase of a fracture undergoing repair appeared to accompany the formation of hypertrophic cartilage cells, osteoblastic activity, and the formation of bone matrix.

3. With the exception of two cases, there was no indication of concomitant changes in the serum phosphatase of humans or rabbits during the repair of fractures.

4. The introduction of phosphatase into the site of experimental fractures produced no change in the rate or apparent quality of the calcification of the bone matrix.

We wish to thank Prof. W. E. Gallie for his help and advice, and Sir Frederick Banting, F.R.S., for his continued interest during the course of the investigation. We are indebted to Miss Helen Thompson, of the Toronto General Hospital, for assistance in the collection of specimens of human blood.

REFERENCES

1. Robison, R.: Significance of Phosphoric Esters in Metabolism, New York, 1932.
2. McKeown, R. M., and Ostergren, J. I.: Proc. Soc. Exp. Biol. and Med., 1931, xxix., 54.
3. King, E. J., and Armstrong, A. R.: Canad. Med. Assoc. Jour., 1934, xxxi., 376.
4. Folin, O., and Ciocalteu, J.: Tyrosine and Tryptophane Determination in Proteins, Jour. Biol. Chem., 1927, lxxiii., 627.
5. Martland, M., and Robison, R.: Preparation and Use of Bone Phosphatase, Biochem. Jour., 1929, xxiii., 237.

OBLITERATIVE ARTERIAL DISEASE TREATED WITH MUSCLE EXTRACT

By M. Schwartzman, M.B.

HONORARY FIRST RADIOLOGIST, LONDON JEWISH HOSPITAL

In 1928 J. Schwarzmann (Odessa) suggested the use of skeletal muscle extract[1] in the treatment of angina pectoris, especially in cases where angiospasm is likely to be a prominent factor. At about the same time Vaquez, Giroux, Kisthinios, and Gley (Paris) recommended the injection of an insulin-free pancreatic extract (Angioxyl); Frey and Kraut (Düsseldorf) introduced a circulatory substance (Kallikrein) which is obtained from the urine, but is also probably of pancreatic origin; while Zuelzer (Berlin) put forward a liver extract (Eutonon) which he later modified so as to contain both liver and muscle. After a few years of trial muscle extract seems to have established itself in practice more firmly than the others, and several commercial preparations are now in use, such as Miol (Russia); Myoston, Myotrat, and Lacarnol (Germany); Mioforte (Hungary); and Miozal (Italy).

Schwarzmann's account of the use of muscle extract for angina of effort led me to study (1929) the possible effect of the same treatment in intermittent claudication—a condition strikingly similar. The results thus obtained[2] encouraged me further to explore the possibilities of muscle extract therapy at the *late* stages of arterial obliteration and I have now applied the treatment in over 100 cases of thrombo-angiitis obliterans, arterio-sclerotic obliteration, arteritis of syphilitic and other origin, incipient diabetic gangrene, and Raynaud's disease, both early and advanced. Some of the results have already been described[3] and I hope to give a full report of them in due course. In the present paper I shall confine myself to two illustrative cases and some general comments.

CASE RECORDS

Case 1.—During the war the patient suffered from contusion of right foot, and trench fever in 1916. In 1919 he began to have intermittent claudication with a progressively decreasing exercise tolerance, reduced in 1926 to about 30 yards slowly pacing. He was treated as an out-patient at Westminster Hospital for shooting pains in both legs, burning sensations and ulcers of the fourth and fifth right toes. Peri-arterial sympathectomy was performed on the right femoral artery in 1927 by Mr. G. T. Mullally, but soon afterwards the patient was readmitted in a more advanced condition of gangrene of the right foot. This and the lower part of the leg were amputated. At the operation the lumen of the arteries was found to be completely filled with granulation tissue; the muscles of the vascular walls were infiltrated with fibrous tissue, the muscle bands were broken up. During the amputation the arteries did not spurt.

When I saw him in May, 1930, there were advanced gangrenous changes on the *left* foot and the amputation stump; he had excruciating pain, and the left big toe had partly sloughed. The foot was deep blue, cold, and swollen. Both legs showed extreme blanching on elevation with return of colour on the left side at an angle of 20° *below* the horizontal plane. The left posterior tibial and dorsalis pedis arteries were pulseless. The Wassermann reaction was negative in blood and cerebro-spinal fluid. The diagnosis was thrombo-angiitis obliterans, and with Mr. Mullaly's permission I started muscle extract treatment in May, 1930, continuing it for more than six months. The first month brought no appreciable change though further spreading of gangrene seemed arrested. In July a necrosed portion of the terminal phalanx of the big toe separated, discharge stopped, pain ceased, and normal granulations appeared on the ulcerated surfaces. In December, 1930, the wounds had healed and the patient could walk over a mile with no pain or local tiredness. The feet were warm and the angle of circulatory efficiency was, on the left side, about 20° *above* horizontal. The pulse reappeared in the left posterior tibial artery.

At the end of January, 1935 (four years after treatment ceased), he reported that he was free from pain and tiredness in the legs, even on walking two or three miles. The foot becomes bluish on exposure, but it is not unduly cold. On examination I found blanching with the leg elevated, but return of colour was prompt on both sides at 130° (40° above horizontal).

Case 2.—A man, aged 62, when seen in January, 1931, gave a history of intermittent claudication since 1929. His walking distance had gradually decreased to 30 yards, and for the last three months he had had severe pain in his left foot which became persistently blue. Gangrenous patches had appeared on three left toes. I found both feet, particularly the left, much swollen, very cold and deeply cyanosed. The skin on three toes was broken down: the big toe was black with a green patch underneath the broken surface, and there were similar patches on the

other two toes. The angle of circulatory sufficiency was: left side 15° below horizontal; right side 10° above horizontal. Pulsation was absent in pedal arteries on both sides, doubtful in the popliteal, but well felt in both femoral. The radial arteries were hard and tortuous. The Wassermann reaction in the blood was negative, and the blood pressure 150/100. The patient looked exhausted and suffered greatly from insomnia.

The diagnosis was arterio-sclerotic obliteration of the main arteries of both legs. Treatment began in January, 1931, and continued for four months. Injections were given partly intramuscularly and also hypodermically, close to the site of the gangrenous patches. Pain ceased towards the end of the first month, the green patches were replaced by healthy granulations and healed up at the end of the second month. The walking ability had increased to nearly half a mile at the end of the fourth month. When seen at the end of 1932 the patient looked healthy and much younger, and said that his general condition was better than for many years. He could walk at a moderate pace an unlimited distance without experiencing discomfort. Return of colour in his left leg after previous elevation was seen at 140° (50° above horizontal, as compared with 15° below horizontal before treatment). Postural colour changes in the right leg were very slight. The arteries remained pulseless as before. When he was last heard of in February, 1935, the results were reported to be maintained, though there has been no treatment since 1932.

COMMENTS

These are two out of a considerable number of cases of various types of obliterative arterial disease in which success has been attained. The long duration of the effects and the very slow initial response, coupled with a progressive amelioration long after the discontinuation of treatment can, in my opinion, be accounted for only by *a gradual establishment of a collateral circulation*. I cannot agree with the suggestion made by Roth and Brown, of the Mayo Clinic, who, having recently confirmed my results in intermittent claudication, are inclined to think that the amelioration is due to the supply of some metabolic substances in which the ischæmic muscle may be deficient.[8]

Such results as these justify a more optimistic outlook than that of Buerger, who seems to regard reported "cures" of thrombo-angiitis obliterans as no more than temporary arrest of an inevitably progressive disease. That such a "temporary" arrest, occurring even at a comparatively early age, can continue throughout a long life may be seen from the remarkable case of thrombo-angiitis obliterans, whose clinical (and partly also pathological) features were described in a masterly manner by Parkes Weber[4] in 1908, before the appearance of any of Buerger's publications. This patient whose progress has been followed by Dr. Weber to the present day suffered at the age of 41 from gangrenous changes on the toes, a result of a badly compromised circulation through the limbs. But since an improvement at the age of 59, not only has he enjoyed freedom from active signs of progressive obliteration, but his limbs now show, at the age of 70, a better blood-supply than 29 years ago.[5] Thus adequate collateral circulation, once established, can sometimes be considered, to all intents and purposes, a cure. But since the establishment of such a compensatory circulation is necessarily slow, while the vasodilator effect of a single injection of muscle extract is brief, one must persevere for a long time and apply adequate doses frequently. In some of the severe cases I administer 2 c.cm. several times a day, sometimes for weeks, and continue, with progressive diminution of the dose, for six months or even more.

While this treatment has been approved by various workers, its value in cases of gangrene has been denied by some—among them recently Morawitz (Leipzig)[6] who strongly advocates early operation. According to this advice a considerable number of my patients (some of them manual labourers) who have now resumed their activities would have had one or both legs amputated long ago. Hence I cannot help thinking that hurried amputation in these cases is definitely unjustifiable unless the gangrene spreads rapidly notwithstanding treatment, or grave toxæmia is threatening.

The discrepancy in results is partly due, I think, to differences in technique. The extract should be administered over a long period in massive divided doses several times a day, unless it tends to cause a more considerable fall of blood pressure than desired. One injection a day or every other day, and a trial for a week or so (as is commonly done) can hardly be expected to produce much benefit. The good results in the cases above described were achieved with skeletal muscle extract; I have used extracts prepared for me in various laboratories in London and elsewhere and various commercial preparations. But in spite of intensive treatment I have encountered many failures—over 30 per cent.—and these may partly be accounted for by the inconstant and low potency of the extracts which have been found by Korach[7] to vary a great deal even with different batches of the same preparation. It seemed necessary therefore to obtain an extract of a higher and more reliable potency, and I have found that such an extract can be obtained from the *diaphragmatic muscle*. There is reason to believe that the higher the rate of metabolism of an organ and the greater its vascularisation, the larger is the quantity of physiologically and therapeutically active substances liberated, formed, lodged, or activated in its tissues. The diaphragm is a powerful, constantly active, and highly vascular muscle, alternately contracting and relaxing throughout the whole life of the animal; it differs from skeletal muscles in its constant activity and from constantly active heart muscle in that it is probably never fatigued and rarely, if ever, diseased. Accordingly it seems peculiarly fitted for the present purpose, and with this in mind the diaphragmatic muscle extract now known as Carnacton (made by the Cavendish Chemical Co., London) was prepared for my trials. Experience with it during the last two years suggests that it is preferable to previous extracts in giving a quicker response to treatment and diminishing the proportion of failures. What has proved to be of particular importance is the prompter lessening of the "rest pain" which can sometimes be so severe and demoralising as to make the patient beg for amputation before the slow process of establishing a collateral circulation begins to show more or less appreciable results. I do not claim, however, that diaphragmatic muscle extract offers the only, or the *most* satisfactory, solution to the problem of securing a high therapeutic potency.

REFERENCES

1. Schwarzmann, J. S.: Zeits. f. Kreislaufforsch., 1928, xx., 515; Münch. med. Woch., 1929, lxxvi., 1329.
2. Schwartzman, M. S.: Münch. med. Woch., 1930, lxxvii., 758; Brit. Med. Jour., 1930, i., 855.
3. Schwartzman, M. S: Brit. Med. Jour., 1931, i., 492; Proc. Roy. Soc. Med., 1931, xxiv., 697.
4. Weber, F. P.: THE LANCET, 1908, i., 152.
5. ,, ,, : Ibid., 1925, ii., 21; Proc. Roy. Soc. Med., 1931–32, xxv., 13; also personal communication.
6. Morawitz, P.: Deut. med. Woch., Jan. 11th, 1935, p. 45.
7. Korach, S.: Prakt. Arzt, 1931, vol. xxiv.
8. Roth, G. M., and Brown, G. E.: Med. Clin. North America 1934, xviii., 609.

"IMU"

A MALADY OF THE AINU*

By Dr. Y. UCHIMURA

PROFESSOR OF MEDICINE, THE UNIVERSITY OF HOKKAIDO

THOSE habits of mind and of behaviour, which are peculiar to a given people, and which are commonly referred to as racial characteristics, may show themselves not only in common features of everyday life, but in emotional or spiritual predispositions which are, as a rule, revealed only in those individuals of the race who are the victims of some mental disturbance which renders them liable to attacks of emotional decontrol. When such psychopathic individuals break down under an emotional strain, the symptoms which appear are the result of an interplay of intellectual and emotional reactions which do not differ essentially in kind from those which characterise the more stable members of the race, and therefore an accurate study and complete understanding of the mental ailments peculiar to a given race is only possible when one has already a knowledge of the faith, superstitions, customs, and other domestic peculiarities of the people in question. This relation is a reciprocal one, and it is often found not only that such knowledge enables us to interpret morbid symptoms, but that the symptoms themselves reveal or explain otherwise obscure native superstitions.

The malady to which the name "imu" is given is found among the Ainu where it is very frequently observed, although it has attracted little attention in the medical literature of other parts of the world. In 1901 Dr. Yasusaburo Kasaki published a detailed report on this subject. Although apparently less common now than in his time, the malady is still endemic and even in the smallest communities one or two susceptible patients can be found. It is almost entirely restricted to women who have passed middle age. From our own investigations we have gained the impression that those "imu" patients whom we have observed have been slightly above the average in intelligence and sometimes also in their standard of living: their level of instruction is not lower than the normal, and they are found at all levels of social standing.

Personal observations, confirmed by information derived from their neighbours, makes it clear that in between the attacks which characterise this malady the patients are free from any peculiarities of behaviour and they are in no way to be distinguished from other members of the community. The condition of "imu" makes the patient liable to attacks of psychomotor disorder precipitated by some emotional shock. The word "imu" may be translated as meaning "severe shock": the condition itself is referred to in native parlance as "imu-futchi" or "imu-bakko," each of these suffixes meaning "old woman." It is sometimes also referred to as "tokkoni-bakko," "tokkoni" being the native word for viper, a reptile the exhibition or mention of which frequently precipitates attacks and an abhorrence of which is deeply interwoven in local superstition. Of all these terms "imu-futchi" appears to be the most suitable.

The symptoms of an attack may be many and varied, the severity depending to some extent upon the degree of emotional disturbance associated with the precipitating stimulus. But this is not always so. In some patients the mention of anything at all that is emotionally disturbing, but particularly of the words "tokkoni" or "bikki" (Ainu: bikki = frog), will lead to a sudden outburst of violence in which a woman previously perfectly normal in behaviour will act as though trapped and terrified or confronted with some immediately vital peril; she will attack indiscriminately everything that enters her range of vision, seizing as weapons anything that lies to her hand, and throwing about sticks and stones in a violent but aimless manner. Such patients may be extremely dangerous to persons around if they can seize upon a knife or any weapon; also under the influence of this excitement they are capable of exerting an amount of muscular power which would never have been expected from one of their build and age. Thus, one old woman of 70 completely destroyed a toy snake which was shown to her, by her furious blow which she delivered with her cane. At times patients will attack onlookers and then fly in terror. From this description it will be seen that these outbursts of violence may be regarded as due to the unrestrained and undirected operation of a very primitive instinct for self-defence.

The attacks do not last for more than a few minutes and the patient very quickly returns to complete normality: some appear to have no recollection of their behaviour during the attacks, while others seem to be deeply ashamed of their conduct. With less severe emotional shocks, or in patients who are less easily aroused, the disturbance often takes another form. Thus if, for instance, in the course of an ordinary conversation with a patient one's friendly tone is suddenly discontinued and a word is uttered which is not pertinent to the subject under discussion, the patient may appear suddenly bemused and will continue for a time to echo everything that is said to her. "One," you say to her and "one" the patient echoes; "you fool," and "you fool" is the answer; "bow," and she returns "bow-wow." At times such a patient will echo remarks made not to her but to someone or to something else; thus, on one occasion, while trying to get a dog to bark before feeding him with a piece of cake, I prompted him by saying "bow-wow"; to my surprise the answer came not from the dog but from an "imu-futchi" who had been standing under the eaves of a dwelling some way away and who repeated "bow-wow, bow-wow!" The patient's echoing is independent of any significance the words may have for her, for words of a foreign language are repeated in the same way. Similarly, actions are copied; clapping the hands, raising the arms, and pushing the patient backwards all elicit similar acts on the part of the patient; a condition which may be similarly described as echopraxia as distinguished from echolalia.

When in this bemused condition patients are highly susceptible to suggestion; they no longer exercise independent control of their actions and are not really answerable for the consequences of these; they will carry out orders with the utmost precision and if placed in a given position will remain cataleptically in that exact posture until released by permission to do so. If ordered to dance, the quietest and most submissive of women will dance such steps as are recognised as being an essential prerogative of the men, and a woman of over 60 will dance as gaily and as lightly as a girl, not ceasing until she is so ordered and continuing until so fatigued that she is unable for some time further to stand. If bidden to do something not within the limits of her physical ability she will nevertheless valiantly

* Translated from the Japanese by Miss Amy Neichi.

endeavour to obey. If ordered to strike a given person, that person will be relentlessly pursued until the blow has been given. No physical hardship or discomfort is allowed to stand in the way; to plunge into freezing water in the depth of winter or to bathe in boiling water offers no deterrent, and so commonly is this the case that at times mischievous youths under the influence of liquor, have, through their thoughtless pranks, caused considerable commotion and trouble by orders given in this way to an innocent cataleptic patient.

In some patients the negative aspect of these three forms of reaction appear equally clearly. Instead of repeating what is said to them they answer with a direct opposite; instead of imitating movements they make one, the significance of which is exactly the reverse; instead of obeying suggestions they act in a directly contrary manner. Thus, the reply to "one" will be "two"; to "Sapporo," "Kushiro"; to "bikki" (frog), "kaimachike" (skeleton); to "man," "kuruma" (a Japanese woman). When shown a closed fist the patient will extend her open hand and vice versa; if the observer bends, the patient will stand more erect; if ordered to approach she will retire; if bidden to withdraw she will hasten nearer; if beckoned she will look uninterestedly away, while if the observer manifests no interest she will endeavour to attract his attention.

Our attempt to photograph an "imu" patient was frustrated by the patient's objection until the photographer in disgust said "Very well then, I won't photograph you," when she hurriedly changed her attitude and begged to be filmed.

DISCUSSION

This condition appears in a race of a low cultural standard, and it is interesting to note that similar maladies are to be found amongst the natives of Malay, the Yakuts of Siberia, and the American Indians, other races whose cultural level is recognised as being lower than that of the average. The primitive spiritual life of these peoples, with their countless superstitions, legends, and traditions, and their high degree of suggestibility, are the chief causes that favours the appearance of this malady amongst the Ainu. Further, the symptoms themselves are such as may be expected in those following primitive lives still closely patterned upon the instinctive behaviour of lower animals. The echolalia and the echopraxia both in their positive and in their negative forms are strongly reminiscent of the behaviour often observed in normal children, for children will not only repeat instinctively what they hear and copy what they observe, but will also often with equal innocence and lack of malice attempt to assert themselves in withholding the answer they know to be desired, in refusing to comply with requests and in a general perversity of behaviour which appears exactly similar to the negativism of the "imu-futchi." The other less particular and less deliberately directed forms of behaviour can be equally well paralleled in the instinctive behaviour of lower animals. The excesses of violence appear like the futile and undirected flight of a bird that has wandered into the unfamiliar surroundings of a room and is attempting blindly and instinctively to escape. The cataleptic inertness can be equally well paralleled by another naturally occurring form of self-defence, that observed for example in a spider or in a woodlouse which, when suddenly disturbed, will become instantly inactive, presumably for the natural purpose of feigning death or of passing unobserved.

Thus all the symptoms of the "imu-futchi" may be regarded as due to the operation of instinctive forms of self-defence or of instinctive forms of self-assertion which are to be commonly observed in lower forms of life, which play some part in the behaviour of our own children, and which are occasionally copied for our own purposes as when we assume a defensive immobility when threatened by some beast of prey. If this view is accepted with regard to the symptomatic *content* of the attacks, it must not be inferred that the *form* of the "imu" attack is that which is commonly observed in the hysterical symptomatology of races on a higher cultural level. "Imu" and hysteria have many points in common, but the regularity with which an attack can be provoked, the suddenness of the onset, and the transitory duration, all suggest that "imu" has more automatic qualities and is easier to arouse than are hysterical attacks. The echo-symptomatology, both of hysteria and of "imu," loses in time its direct connexion with mechanisms of self-defence and becomes a mere habitual reaction, the significant inference from such patients being not that their mental content or that their instinctive reactions are any different from those of normal persons, but that they are temperamentally or constitutionally less resistive to emotional strain and are therefore liable to outbursts of emotional decontrol when faced with certain stimuli which leave the normally balanced unaffected.

If we ask why it is that the malady should appear in this particular form among the Ainu peoples, the answer is to be found in a consideration of the spiritual and domestic characteristics of that race. Their spiritual life is peculiarly primitive and, as with all such races, their degree of suggestibility is high. In this race also the social status of women is very clearly defined; the woman is forced through habit and custom to be completely submissive to the man, and this suggests one reason why the attacks may be so largely confined to women past the middle age and why they may take this particular form. Two incidents which I witnessed may serve to illustrate the argument. An old Ainu woman was sent rolling down a bank of mud by a maudin Ainu man. In spite of this insult she did not offer a single word of protest nor any act in self-defence; her daily training in habitual submission was too strong. In another community two "imu" patients who had been aroused to an attack fell upon the men surrounding them and showed their undisguised joy in having thrown one of these to the ground.

Thus, we may regard both hysteria and "imu" as being due to repressed resentment, the relief from which repression takes the form of paroxysmal outbursts in which instinctive forms of self-defence find violent expression or dominate the behaviour, and we may further suggest that the resentment which activates the "imu-futchi" patient is that occasioned by the subordinate and submissive place to which she is relegated by Ainu tradition.

GIFT TO WELSH HOSPITAL.—At the opening of the new radiological department and ward block at the Swansea Hospital on May 16th it was announced that Mr. D. W. Davies, of Ystalyfera, Glamorgan, had given the sum of £10,000 to the hospital. The gift has made it possible to open the new buildings free of debt.

BUCHANAN HOSPITAL, HASTINGS.—It has been arranged to proceed with the building of the new nurses' home which is badly needed. Over £4500 is already in hand for this purpose, but another £500 is still required.

CLINICAL AND LABORATORY NOTES

A CASE OF B. COLI MENINGITIS

By T. A. Ratcliffe, M.B. Camb.
LATE HOUSE PHYSICIAN, SHEFFIELD CHILDREN'S HOSPITAL

Meningitis due to *Bacillus coli* is uncommon. Findlay [1] states that of 789 consecutive cases of meningitis admitted to the Glasgow Royal Hospital for Sick Children between 1914 and 1929, only one was due to this organism. The condition was first described in 1895 by Schreer,[2] but only 42 cases had been reported by 1926, when the literature was reviewed by Neal.[3] Gibbens [4] in 1932 reported 3 more.

X. Y., a girl aged 6 weeks, was admitted to the Children's Hospital, Sheffield, on Feb. 1st, 1935, with a history of "convulsions at intervals for 12 days." Previous to this she had been quite well, and the onset had been sudden. There was nothing in the history to suggest birth injury, and she was a breast-fed baby. For the 12 days there had been several convulsions a day, during which "she went blue and twitched." Between the convulsions she lay still, but if her head were touched she screamed. She was constipated, and she had vomited several times. On examination the child was semi-comatose and the respirations were stertorous. The head was hydrocephalic, the sutures were all widely opened, and the fontanelle was bulging. There was marked head retraction and a positive Kernig's sign; pupils equal, but reacting sluggishly to light; abdominal reflexes absent; legs very spastic; knee-jerks much accentuated. The other bodily systems were normal.

A lumbar puncture was performed on the day of admission, and about 2 c.cm. of clear fluid was obtained (there was no increase of pressure), followed by a free flow of what appeared to be pure blood. The child's condition progressively became worse, and she continued to have several convulsions each day, the head becoming definitely more hydrocephalic. Up till Feb. 5th the temperature remained normal, but after this it rose gradually, being 100° on the 7th, 101° on the 12th, and 104° on the 13th. The pulse-rate rose from 150 to 170, and the respirations from 36 to 58. The child died on the evening of Feb. 13th.

A second lumbar puncture had been performed on Feb. 4th, with the same result as before. With so little fluid obtainable, only culture was attempted, and this gave a pure growth of the *Bacillus coli*. The mother's Wassermann reaction was negative, and radiography of the child's skull revealed no abnormality apart from the hydrocephalus. Post mortem the brain was found to be very large; the ventricles were distended with thick semi-mucoid greenish pus, the cortex being reduced to paper thickness in places. There was much pus at the base, and fairly dense adhesions between the medulla and the cerebellum. Films from the intracerebral pus showed very numerous Gram-negative organisms resembling *B. coli*. The other bodily systems showed no abnormality.

B. coli meningitis seems to be seen more often in children, especially infants, than in adults. Convulsions are usually a conspicuous feature, but the signs are frequently equivocal and do not always point so clearly to a meningitis as they did in this case. The actual diagnosis can, of course, only be made after lumbar puncture. Characteristically, the cerebro-spinal fluid is difficult to obtain. In one of Gibbens's cases aspiration was necessary, and in another no fluid could be obtained. The explanation of this appears to be the presence of much pus, and even adhesions, around the base of the brain, a state which was well marked in this case, and which Boyd [5] also describes. It is this, of course, which produces the hydrocephalus also. *B. coli* meningitis is usually considered to be a terminal event in a *B. coli* septicæmia, and some focus of infection is usually found elsewhere in the body, the middle ear being a very common site. No such focus, however, was found in this case, either clinically or post mortem, and careful questioning suggested that the onset was sudden without any prodromal symptoms. There was, moreover, no pyrexia until the latter half of the illness. Boyd [5] has described a case in which no primary focus of infection could be found. No case of recovery from *B. coli* meningitis appears to have been reported, and treatment is of no avail.

I am indebted to Dr. H. Leader, under whose care the case was, for permission to publish this report, and to Dr. H. E. Harding for details of the post-mortem examination.

REFERENCES

1. Findlay, L., and Thomson, J.: Clinical Study and Treatment of Sick Children, Edinburgh, 1933.
2. Schreer: Jahrb. f. Kinderheilk., 1895, xxxix., 1.
3. Neal, J. B.: Amer. Jour. Med. Sci., 1926, clxxii., 740.
4. Gibbens, J. H.: THE LANCET, 1932, i., 1298.
5. Boyd, W.: Pathology of Internal Diseases, London, 1931.

CHAUFFEUR'S FRACTURE

By W. B. R. Monteith, M.A. Camb., F.R.C.S. Edin.

Unlike a Colles fracture, which may vary quite considerably within certain limits, chauffeur's fracture has stereotyped and distinguishing features. These are too well known to need description; the accompanying photographs (Fig. 1) show appearances that are typical. Joint involvement is noteworthy as the cause of the pain that accompanies this lesion—pain which is more than usually severe. Accordingly, like other fractures complicated by joint-involvement, it demands complete initial immobilisation. As with the fracture of the base of the first metacarpal that goes by the name of Bennett's

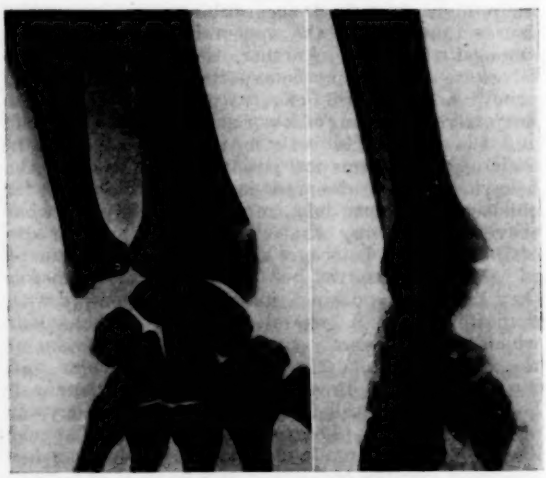


FIG. 1.—Radiograms showing chauffeur's fracture.

fracture, there is an aggravating (and sometimes disappointing) tendency for the small fragment to become redisplaced after entirely satisfactory setting. The following method seems to justify description as a means of securing painless immobilisation with

certainty of sound union and full functional use within a reasonable period.

A plaster-of-Paris slab made of several thicknesses of three-inch impregnated bandages is moulded to the volar aspect of forearm and hand after satisfactory reduction. Sponge rubber is then applied over the dorsum of the wrist. First a three-inch-square piece of half-inch thickness is placed directly on the skin and then over this, along the line of the joint, a strip one inch thick and one inch wide is applied. These are drawn down firmly by an encircling plaster-of-Paris bandage, applied over the pads in the form of a St. Andrew's cross, leaving thumb and fingers free. An annular band is also applied distal to the elbow to retain the upper part of the slab in position. Voluntary movement to the full range permitted by retentive apparatus is encouraged for fingers and thumb. At the end of three weeks the pressure pad has done its work and can be removed by splitting the side attachment of the St. Andrew's cross component. For a further three weeks the volar slab provides adequate and satisfactory splintage; it can be periodically removed for massage and gentle movement. I do not suggest that at the end of six weeks car-cranking can be safely undertaken; but the arm and wrist is strong enough for most light or medium work. An elastic adhesive bandage can with advantage be applied to give further support to the wrist at this stage.

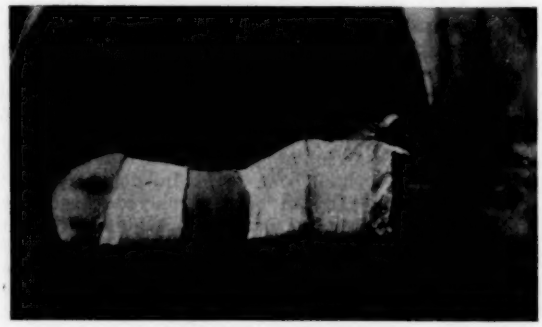


FIG. 2.—The splint applied.

Fig. 2, showing splintage as applied (with sponge rubber pad enclosed) gives probably a more definite and immediate idea of the method than any written account.

Bourne, Lincs.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

FOLLOWING the annual general meeting of this section on May 28th, Sir FARQUHAR BUZZARD, the president, being in the chair, several short communications were made, the first by Dr. C. C. UNGLEY on

Parenteral Liver Therapy

in pernicious anæmia and subacute combined degeneration. He showed two cinema films, one lent by Dr. W. P. Murphy of Boston dealing chiefly with the hæmopoietic effect of liver extract administered intramuscularly. This demonstrated the economic advantages of the parenteral route; the blood regeneration was more rapid than with liver extract given by the mouth. Simultaneous administration of iron hastened the rise of hæmoglobin concentration. A monthly injection of 3 c.cm. of liver extract (Lederle), derived from 100 grammes of liver, was usually sufficient to maintain the red blood-cell count at or above 5 millions per c.mm. In conjunction with re-educational exercises, the method gave good results in patients with subacute combined degeneration. Amongst other illustrations the film portrayed a patient, unable to stand or walk without help, whose gait three months later was almost normal.

The second film, taken in Newcastle-upon-Tyne, depicted the condition of patients with subacute combined degeneration before and during intensive parenteral liver therapy. Campolon and Pernæmon forte were given in amounts varying from 15 to 42 c.cm. a week. In most cases there was improvement in gait and in the symptoms and signs of neurological involvement. The change was sometimes striking, in that patients with severe ataxia and paraplegia recovered their ability to walk and even returned to their original employment. In one instance improvement followed the use of short-wave electrical pyrexia, parenteral liver therapy alone having ceased to be effective.

Dr. G. GREGORY KAYNE spoke of the use of

Sanocrysin in Pulmonary Tuberculosis

He said that although ten years had elapsed since Møllgaard's first publications on sanocrysin, wide differences of opinion still existed as regards indications, mode of application, and results obtained. His remarks in the present paper were based on observations made from personal contact with several continental workers. It was generally agreed that sanocrysin had no marked effect on tubercle bacilli in vitro. Møllgaard claimed at first that it had a direct bactericidal effect in the animal body, and advised the use of a serum prepared by immunising healthy animals, in the belief that it would neutralise the toxins presumably liberated by destruction of the bacilli and the cause of the severe reactions which followed. The appreciation that the metal itself might play a rôle in producing reactions, their diminished frequency with smaller doses, and the varying results obtained with the serum led to rejection of the theory of a direct bactericidal action. Alternatively it had been suggested that sanocrysin might act as an aid or stimulant to the natural tissue defences. O. Bang could not confirm Møllgaard's curative results in calves and maintained that the findings were due to using attenuated bacilli for infecting the animals and unreliable controls. Madsen and Mørch obtained positive results in rabbits, but later both they and K. A. Jensen were unsuccessful in repeating the findings. In England Lyle Cummins reported favourable results in rabbits, and Atkin concluded that sanocrysin exerted an inhibitory effect on tuberculous lesions apart from any bactericidal action it might have. Reviewing the guiding principles of sanocrysin therapy in the centres visited by him, Dr. Kayne first referred to the work of Secher, and pointed to the circumstances which prevented a just estimation of the part played by the sanocrysin in the reported results. Secher's indications were wide, and his initial dosage the highest administered at present, in the belief that "reaction greatly activates the cure"; yet his total dosage was low. His results were thus probably due to "shock therapy." Gravesen's use of sanocrysin was based on the early exudative lesion being the ideal indication, whether occurring by itself or in association with an older process. He found it a valuable aid in collapse-therapy and used moderate increasing dosage

with short intervals, attempting to avoid reactions. After referring to Faber, Permin, and Würtzen in Copenhagen, and pointing out that in Norway and Sweden sanocrysin had not been used in recent years, Dr. Kayne dealt with Sayé's work in Barcelona. The latter's results were more telling owing to the very inadequate sanatorium accommodation and the low economic level in Spain. Sayé, too, believed the early exudative lesion to be the ideal indication, but advocated the use of the salt in other types of cases. Beginning with very small, he rose to large doses, being guided in that and as regards intervals by the type of case and the reactions, which he grouped as (1) focal, (2) those due to metallic intolerance, and (3) those due to metallic saturation. He had also used gold in ambulant patients, as is also extensively done in the clinics of the late Léon Bernard in Paris.

Summarising, Dr. Kayne concluded that the clear indications for sanocrysin were: (1) recent exudative lesions, unless cavitation was already present; (2) similar lesions associated with old-standing disease, either contralaterally or homolaterally when detected by serial skiagrams; and (3) as an ambulatory treatment in certain cases detected during the routine examination of apparently healthy individuals. Severe constitutional symptoms should be regarded as a relative contra-indication to sanocrysin. He did not think its use justified as a placebo. The best dosage appeared to be a progressive increase from small doses, the intervals to be based on the principles laid down by Gravesen and Sayé.

Dr. BURGESS BARNETT, speaking of the

Hæmostatic Use of Snake Venom

outlined the results of clinical trials which solutions of this venom have now received at St. Bartholomew's Hospital and elsewhere. This work was a sequel to the preliminary report by Dr. R. G. Macfarlane and himself in THE LANCET of 1934, ii., 935, in which it was concluded that the venom of the Indian snake, Russell's viper, contained a powerful blood-coagulant which it was suggested would prove of value as a hæmostatic both in normal and hæmophilic hæmorrhage. The venom, he said, behaved as though it contained activated prothrombin and it was employed as a local application to increase the prothrombin content of the blood as the latter was shed. Used in this way, in a dilution of 1 : 10,000, it was without toxic effect; the venom-formed clot of a hæmophilic was as tough and elastic as that of normal subjects, and it was formed just as rapidly. Cases in which it had been employed fell into three groups: hæmophilic subjects, subjects of other abnormal blood conditions, and those with normal blood. Dr. Barnett recounted in detail clinical cases in which the venom solution had been used to control hæmorrhage in hæmophilics of the most pronounced type following dental extractions, accidental wounds, and from epistaxis. In epistaxis light anterior plugging with ribbon gauze soaked in the solution had always secured immediate hæmostasis. Replugging had never been necessary. Following dental extractions, although a firm clot was always formed when the socket was plugged with venom-moistened wool, there was often difficulty in carrying the clot down to the bleeding point in the presence of an alveolar abscess. In these cases the dressing often had to be repeated several times a day for several days in order to control the hæmorrhage until the septic condition cleared up. The use of a specially made dental plate, to retain the dressing and maintain pressure, had proved valuable in such cases. The use of the venom solution rendered the extraction of teeth from hæmophilics a relatively safe though still serious operation. In dressing wounds, gauze moistened with the solution was applied and pressure maintained to secure temporary hæmostasis until the clot was formed. The possibility of hæmorrhage recurring later made skin sutures inadvisable. In abnormal blood conditions other than hæmophilia there were satisfactory reports of the use of the venom as a hæmostatic in purpura, leukæmia, and aplastic anæmia; the only case in the speaker's personal knowledge was that of a boy with purpura hæmorrhagica in whom epistaxis had been stopped on several occasions. In subjects with normal blood the venom solution had been used in dentistry and general surgery. It had been employed constantly in the dental department at St. Bart.'s for six or seven months and it had only failed twice. In one of these failures it was found that the excretion of ascorbic acid in the urine was below normal; this was probably a case of subclinical scurvy. A private dentist had found the venom particularly useful in stopping the slight bleeding that often delayed the completion of dental fillings, particularly those below the gum-margin. In general surgery it had been employed by Prof. G. E. Gask to stop capillary oozing after breaking down adhesions from the surface of the liver and after stripping the capsule from a kidney. Mr. A. M. Boyd had used it successfully after tonsillectomy.

SECTION OF STATE MEDICINE

AT a meeting of this section on May 24th, the president, Dr. J. D. ROLLESTON, being in the chair, a discussion on

Epidemiology in Country Practice

was opened by Dr. W. N. PICKLES, who gave an account of observations during a period of more than 20 years on the spread of infectious disease in a number of rural parishes in the still isolated district of Wensleydale. The records of mortality in the parish register of the once flourishing market town of Wensley, now shrunk to the measure of a little village, threw, he said, a dim but suggestive light on past epidemics, e.g., the visitation of plague in 1563, which probably had much to do with the decline of the town, while a note on small-pox in 1841, written by a rector, strongly impressed the value of vaccination. Life in many rural villages follows a more orderly routine and is lived in a more circumscribed orbit than in populous places, and village doctors are able to gain a detailed knowledge of the lives, loves, hopes, and avocations of most of their patients. In the elucidation of individual problems of the origin and spread of infection this knowledge often affords help denied to those working in the din and turmoil of a city practice. Dr. Pickles urged all similarly placed observers to bring forward their results, since it is only by the summation of many observations that the full value of this opportunity of adding to our stock of knowledge will be elicited. With the help of his daughter, Dr. Pickles has kept careful records and charts of every individual case of infectious disease that has come under his notice, and, aided by an intimate personal knowledge of most of his patients, he has been able to observe a uniformity in the incubation period of certain infective diseases strongly suggesting that the limits set out in text-books may be too wide. Certain cases of measles, in which almost the precise moment of the sole opportunity for infection could be definitely fixed, had an incubation period of exactly 12 days. In an epidemic of catarrhal jaundice in 1929–30, out of a population of 5700 at risk, 250 were attacked.

Of the 118 patients personally attended by Dr. Pickles, the charts relating to 23 in whom it was possible accurately to trace the chain of infection, strongly supported an incubation period of about a month, though there are, he thinks, two forms of this disease, one with an incubation period of only 2-5 days. His observations suggest that its infectivity is low and that the period of infectiousness is short. Careful observation of the alarming but transient symptoms of a disease up till then unknown in the district, enabled Dr. Pickles and his partner, the late Dr. Dean Dunbar, to identify it as epidemic myalgia or Bornholm disease. Dr. Pickles also brought forward observations in support of the belief that herpes zoster and chicken-pox are variants of the same disease. But while the Wensleydale villages are still comparatively isolated and remote, the centralisation of schools has afforded opportunities for the dissemination not only of knowledge but also of infectious disease. A zealous teacher, not realising she was suffering from influenza, in a single morning gave rise to 78 cases in an area up till then free from the disease. In an outbreak of Sonne dysentery, it was invariably the children attending school who first became ill in each of the families affected.

The PRESIDENT, Sir WILLIAM HAMER, Dr. S. MONCKTON COPEMAN, and others took part in the discussion. The work of Dr. Pickles reminded Dr. J. A. GLOVER of a cross between that of Hippocrates and of Gilbert White, and Dr. P. STOCKS spoke of the compound solution of antibodies which passes for normal serum in town-dwellers. Dr. E. W. GOODALL was not prepared to abate the orthodox latitude of incubation periods. Surgeon Captain S. F. DUDLEY agreed, but regarded the study of infection in a comparatively natural population as of great value. Prof. M. GREENWOOD underlined the "fundamental" importance of such work which he considered comparable to that of William Budd and entitled to the widest publicity. The study of the natural history of epidemic disease was of first-class importance; more and more recorded observations of this kind were needed. The communities under Dr. Pickles's observation being less artificial than either mouse herds or ships' companies, deserved the closest study.

CHELSEA CLINICAL SOCIETY

AT a meeting of this society held on May 21st at the Rembrandt Hotel, with the president, Dr. CHARLES SUNDELL, in the chair, a discussion on

Sexual Problems in General Practice

was opened by Prof. MILLAIS CULPIN. The first sex problem in practice, he said, was the practitioner himself. Just as there were practitioners temperamentally incapable of evaluating psychoneurotic symptoms and who therefore never heard them, so there were practitioners who, by their attitude, warned off any attempt to seek their advice on sex difficulties. Any doctor who was unable to ask a question about details of sex life without lowering his voice had better leave the whole subject alone. A practitioner who said he had never met a case of sexual perversion confessed to a personal inhibition. Some difficulties were purely artificial. The problem of sex education for the young only existed in the mind of the adult. There was no problem, therefore, if parents were free of taboo and answered questions with as little emotion as they would give answers about growing potatoes. Once a child had accepted the taboo, a barrier was built up, and this must be recognised by the practitioner, who could rarely penetrate it. To find out what a boy of 12 knew about sex was generally impossible, and the attempt might be recommended to the authors of little books on "What a boy of 12 should know." Adolescent girls might be asked: "Do you want to know?" and if the answer was "No," it must be accepted. If it was "Yes," the frankest possible explanation should be given, not omitting the emotional urge. To present the sexual act as a physiological process for the purpose of impregnation would make emotional difficulties worse. The adult who declared that he had known nothing of sex till the age of 18 was not uncommon. The state was probably a physiological dissociation, and was often associated with a rich unconscious phantasy life.

Masturbation was coming to be regarded as a normal phase of sex development, which made the handling of patients easier. Solemn warnings and attempts at restraint produced lasting harm. Impotence had such varied causes that every case was a separate problem. A conscious or unconscious attitude to sex as something shameful and almost sinful offered an obvious point of attack, and a discussion of the patient's upbringing might reveal twisted views. In impotence, however, the œdipus situation often called for full psycho-analysis; it was indicated by the patient's placing women in the two classes of angels and inferior beings. The worst problem was offered by the healthy woman married to an impotent man who regarded his impotence as a virtue. The practitioner in such a case should never approach the husband on the subject, nor should he tell a woman that her nervous symptoms were due to her husband's impotence. That they are her way of reacting to the situation may be true and an understanding of that view may help her. Frigidity was often part of a psychoneurotic condition and might react to the same treatment. Vaginismus was hysterical.

Homosexuality was often felt as inevitable and unquestionable, but the subject might be unscrupulous or filled with horror at himself. The second type could be helped by discussion, for he was a very isolated individual. Women rarely sought treatment for homosexuality and rarely felt distress at it. The question occasionally arose whether homosexuals ought to be school-teachers. If the condition was recognised and could be frankly discussed by the person concerned, there was less danger. Psychotherapy was not a magic wand, and was useless unless the homosexual wanted to be put on the other track. Generally, when it came to the point, he did not.

DISCUSSION

Dr. JOSEPH GEOGHEGAN divided sex problems into two classes: departures from ordinary sexual behaviour, such as impotence, homosexuality, and frigidity; and departures from ordinary social behaviour involving problems of everyday life. The doctor got to know of these things through being more than a mere doctor. A very sound rule was to consider that one would not oneself want advice. The difficulty should be surveyed with common sense. Advice should not be given. Everybody was abnormal and apt to project his or her difficulties and moral standards. Principles were for oneself; charity for others. The best thing that the general practitioner could do was to be kind, and to send the patient to somebody who understood the subject better.

Dr. TRAVERS SMITH stressed the importance of not telling a woman that the sudden appearance of a neurosis was due to the impotence of her husband.

He did not think it was much use treating homosexuals, for whom nothing but prolonged psychoanalysis was any good. He cited a case of a woman who had vomited regularly every evening at 7 P.M., the time at which her husband came home. She had consulted 15 doctors, none of whom had thought to elicit the fact that she was sick of the sight of her husband, whose impotence had disappointed her of children. As soon as this had been made clear, the vomiting had ceased.

Dr. N. L. LLOYD pointed out that there must be some value in the universal sexual taboo, although society might have misinterpreted or misapplied it.

Dr. HALLS DALLY observed that co-education was more advanced in America than in this country, and that the general opinion seemed to be that it was better for girls than for boys, who tended to become less manly. Petting parties might not be a serious evil.

Mr. F. J. RIDLEY cited the case of a left-handed boy who had had the fullest modern sex education including cattle breeding, but at 15 knew nothing whatever about sex. He had fallen back on the taboo and suppressed the objective lessons put before him.

MEDICO-LEGAL SOCIETY

AT a meeting of this society held on May 23rd, with the president, Sir BERNARD SPILSBURY, in the chair, a paper on

A Police Surgeon's Problems

was read by Dr. T. H. BLENCH (Manchester). These problems, he said, were very varied and being personal were not to be solved by academic discussion. One of the most frequently presented was the degree of alcoholic indulgence which prevented the exercise of proper control over a motor-car. Among all the tests and conditions the police surgeon must keep his main duty in mind; the effects of alcohol were transient, and the point to concentrate upon was the difference between the person charged and the average normal person. When this conclusion had been reached the examination should be stopped. Consent to be examined implied sobriety, inasmuch as drunkenness destroyed consent. The function of the police was to protect the innocent, and the police surgeon should help in this. The examinee should be placed at his ease; there should be no atmosphere of hostility. He himself reduced his examination to the minimum: walking across the floor, standing with eyes shut, coördination test (nose-touching with finger), physical examination, and five minutes' talk. He did not require repetition of set phrases; over-anxiety might vitiate their value. A history of the accident would lead to inquiry as to injury, and in all cases the state of health was investigated. There was a popular idea that if a man had taken any drink before an accident occurred, an accusation of having been under the influence of alcohol was bound to follow. Alcohol was sometimes taken to counteract the effect of shock; whether pure shock might simulate drunkenness could be verified in accidents to teetotallers. There were confirmatory possibilities by testing for alcoholism in the blood, urine, breath, or even the cerebro-spinal fluid, but to submit a person to these tests without his consent might be an assault. It was wrong to allege that the duty of the police surgeon was to support the opinion of the police.

Turning to other problems Dr. Blench said the investigation of sudden death gave opportunities for hard thinking and logical induction. Suicide by cyanide poisoning was found chiefly among persons who used that drug, such as jewellers, photographers, chemists. Some little detail would often give a clue to the person's mental condition. DeQuincy, in his "Murder as a Fine Art," said that the cut-throat was often something of an artist; in one case of murder related by Dr. Blench a young man had inflicted with a razor such a cut 4 inches deep severing the carotids and the larynx; yet the girl walked fifty yards after it. In a case of burglary a bitten apple was left behind, and a smart police officer became suspicious of a man who had lost a tooth. A mould of his mouth was found exactly to fit the apple, and the man was convicted. On the other hand, the production of minute measurements was apt to bore the court. When new methods of detection were introduced there was the danger of over-emphasis. Laboratory investigation should supplement not replace clinical methods.

Mr. CLAUD MULLINS, speaking of charges arising out of motoring offences, admitted that when the influence of alcohol was alleged he paid as much attention to the evidence of the police officer who saw the defendant immediately after the accident as he did to the police surgeon who did not see him until some time afterwards. He always considered these charges with the greatest care, and in four years no one charged with such an offence had left his court without a verdict against him. The Act of 1930 was very explicit: "in charge of a car while under the influence of drink or drugs to such an extent as not to have proper control." This was a very high standard. He was in the habit of putting a homely and searching question: "Would you have liked him to drive you home?" He feared the wording of the new Act had not yet percolated through to advocates generally. When the fumes of the car were alleged to be the cause of the man's helpless state, he always asked whether the windows were up, and if so why.

Mr. ROLAND BURROWS, LL.D., remarked that the answer to the question whether a person was drunk should depend on the circumstances. If asked whether a man was too drunk to go upstairs to bed, or to go home, or to do what he was in the habit of doing in the course of his business, frequently the answer must be No. The criterion was different when in charge of a car. In such a case Mr. Mullins's questions "Would you care for him to drive you home?" went to the root of the matter. It was possible for a man to recover partially from his alcoholism if there was a considerable interval before the police surgeon's examination. Conversely some men did not behave erratically until some time after taking alcohol.

Dr. CALDWELL SMITH stressed the influence on the accused person of nervousness when he found himself charged at a police station; it might modify his answers to a considerable extent. In borderland cases, when the police surgeon was called up in the night, it was wise for him, after a rapid examination, to ask for his decision to be postponed until the morning. With regard to poisoning by fumes from the car, it was important to remember that the driver might not know what was amiss; he just felt unwell and soon was leaning helplessly over his steering wheel.

Surgeon-Captain M. H. KNAPP, R.N., said that forty years ago the crucial question asked in cases of alleged drunkenness was, "Is he fit to go up aloft?" With regard to men driving a car well at the beginning of a journey and being apparently under the influence of alcohol at the end of it, he thought a man might well pull himself together for the first stage, and later let himself go, with the result that he crashed.

A member drew attention to the factor of fatigue. After a long motor run, especially at night, he had

sometimes not felt at all sure of himself, purely as a result of fatigue.

Dr. A. P. GIBBONS told of a man who was charged with being drunk in charge of a car on the evidence of several police officers. He was driving and ran his front wheel into a temporary wooden island, which caused the car to skid. The speaker found a recent abrasion on the man's scalp, caused probably by his head striking a part of his car. The accused elected to be tried at the sessions, and when the speaker mentioned the abrasion the case was stopped and the man acquitted. In another case concussion probably played a part. Magistrates were not always easy to please. In one case his partner certified that a man was very decidedly drunk, and the magistrate asked what tests he had used; when told there was no need for tests, he said he could not convict a man on such evidence. On the next occasion his partner applied every test he knew, and the magistrate said, "If you had all that difficulty in proving the man was drunk, he could not been have so very drunk, after all."

Dr. P. B. SPURGIN spoke of the inhibitory effect of alcohol. Under its influence a man might well be more reckless for a time, and give the impression that he was a better driver than he actually was. He protested against the idea that the function of the police surgeon was to assist the police to convict.

The PRESIDENT said that a police officer who found a man suffering from shock, short of concussion, owing to an accident, might well believe him to be drunk. There was danger in trusting to this first evidence. Cyanide poisoning was not so infrequent as was sometimes thought; death might not follow for some time after taking the poison, especially if the preparation had been kept for some time.

MANCHESTER MEDICAL SOCIETY

The Black Death in England

AT a meeting of this society held on May 1st, Dr. J. E. SPENCE said that the term "Black Death," though later in origin, has now become distinctive of the great plague of the XIV century. England was at that time a feudal State, in which the King was the absolute owner of the land. This was granted to the barons in return for homage and military services, and was subinfeudated by them to knights, whose holding was termed a manor. The manors were self-supporting and were worked in common by the villeins in return for their holdings. Although the villein was not a free man and suffered from many disabilities, knowing no luxury, he was far from a slave. His lot was little worse than that of his lord. The towns of that time, with few exceptions, were merely overgrown villages. Sanitation was unknown, disease rampant, and mortality high. But the people enjoyed their simple pleasures and recreations, and were perhaps very little less happy than the town-dweller of to-day.

The Black Death was plague of the bubonic and pneumonic type. Originating at Caffra on the Black Sea in 1346, it spread first to Constantinople, and then by the maritime trade routes along the Mediterranean to this country, which it reached in August, 1348. It began in Dorset, and spread rapidly, reaching London in October and the north of England in the early part of the following year. It attacked especially the young and vigorous, and caused death in from twelve hours to three days. A distinctive feature was hæmorrhage from the lungs in addition to the buboes. Estimates of the mortality vary considerably, since mediæval chroniclers were extremely inaccurate in their estimates of large numbers, but research among diocesan records has shown that 44 per cent. of the clergy died of the plague, and this figure is probably approximately accurate for the people as a whole. As the population at that time was about 4½ millions, it is probable that the number who died was about 2 millions.

The havoc caused was enormous. Villages were abandoned, manors uncultivated, grain rotted in the fields, and the cattle roamed at will untended. Wages rose, and labour could not be obtained to cultivate the land profitably, hence an impetus was thus given to sheep farming, which required less labour; and the manorial system was gradually superseded by the letting of land to farmers.

NEW INVENTIONS

IRIDECTOMY SCISSORS

THE accompanying illustrations will show clearly the principles and the action of the iridectomy scissors which is essentially composed of an iris hook mounted on a pair of iris scissors, and operating on a combination of the principles of the grafting scissors and of StClair Thomson's tonsillotome. When the blades of the scissors are separated, the iris hook is thrust downward and forward between and below the blades of the scissors: on closing the blades again, the iris hook is first drawn backwards and then lifted above the level of the scissor blades which close below it at a convenient level to make a neat coloboma. For example, in making the preliminary iridectomy for a cataract extraction, a firm grip of the conjunctiva having been taken with the fixation forceps, and the linear incision completed, the

iridectomy scissors are taken up with the thumb and ring finger in the handles, the index-finger placed on top of the instrument which is steadied against the side of the middle finger; the tip of the middle finger is rested on the eyebrow, and, the blades of the scissors being widely opened, the hook is entered into the wound and advanced till the edge of the iris engages; the scissors are then closed when the hook is automatically withdrawn and the iridectomy completed by the closing of the scissor blades. The lens can then be extracted in the usual way. Thus the whole operation is completed by the operator himself without the interference of an assistant, and without letting go the fixation forceps or moving the fixing hand in any way; further, the hook avoids the pinching of the iris in forceps which so often causes spasm or squeezing of the eye.

The instrument must not be used through a narrow incision for a simple iridectomy, for there is not enough free give of the corneal edge to allow of the hook lifting for withdrawal; it is apt to catch on the upper edge of the wound, and cannot be turned over to avoid this.

Messrs. J. Gardner and Son, 32, Forrest-road, Edinburgh, have kindly made the instrument for me. It may be made with straight blades, or curved, which would be more suitable for deep-set eyes.

WM. Y. TURNER, M.A., M.B., Ch.B., D.T.M. & H. Camb.

REVIEWS AND NOTICES OF BOOKS

Midwifery

Fifth edition. By Ten Teachers, under the direction of CLIFFORD WHITE, M.D., B.S., F.R.C.P. Lond., F.R.C.S. Eng., F.C.O.G. Edited by Sir COMYNS BERKELEY, J. S. FAIRBAIRN and CLIFFORD WHITE. London: Edward Arnold and Co. 1935. Pp. 740. 18*s*.

MULTIPLE authorship can be employed in two ways. It is usual to find that each chapter or part of a subject has been allocated to one writer. Not so with the Ten Teachers, one and all of whom accept responsibility for the work as a whole. Each method has its disadvantages, but without doubt the joint responsibility results in the production of a work of great value.

In the fifth edition of this work, which appears under the direction of Mr. Clifford White, its well-known characteristics remain unchanged. Certain additions merit attention, such as a new and remarkably clear diagram of the fœtal circulation, and paragraphs dealing with the physiology of menstruation, the toxæmia of pregnancy, pyelitis, and puerperal infection.

The book is perhaps less dogmatic than most, and especially is this noticeable in the matter of treatment. Thus throughout the book sentences occur such as "good results have sometimes followed this procedure, but it is only applicable to a certain few cases and the results have, as a whole, been disappointing." The impression formed is that the Ten have not always been in complete agreement, and that methods of treatment of unproven value have been inserted and assessed in such doubtful terms for diplomatic reasons. A student or practitioner would like definite guidance, but obviously it is impossible always to provide this. Nevertheless, the uncertain value of a particular treatment might in some places have been stated more clearly. The value of the book is probably greater than any of the preceding editions, and the publishers have maintained the same high quality of print and paper.

Treatment of Rheumatism in General Practice

Second edition. By W. S. C. COPEMAN, B.Ch. Cantab., M.R.C.P. Lond., Hon. Physician, B.R.C.S. Clinic for Rheumatism, Peto-place, Assistant Physician, West London Hospital, Children's Department. London: Edward Arnold and Co. 1935. Pp. 228. 9*s*.

IN the second edition of this book a number of important additions have been made. Gold salt injections are deemed to be of definite value in carefully selected cases; the contra-indications, dangers of overdosage and so forth, are clearly set out. The use of histamine is discussed both as a general treatment by subcutaneous injection and as a local application by means of ionisation. Bee-venom and intravenous calcium therapy are also described. In the chapter on manipulation the use of evipan as an anæsthetic is strongly recommended. The ease with which anæsthesia is induced by means of this drug is of advantage both to the patient and to the operator, particularly in view of the fact that often a second or third manipulation is necessary. The paragraph devoted to short wave diathermy is regrettably short, although its importance is admitted. A longer discussion on the possibilities of this form of treatment would have been welcomed, despite the expense of installation which is at present an obvious drawback to its general use. A chapter on the subject of prognosis and end-results makes it clear that quick results are not to be expected; rheumatic patients must be prepared to undergo treatment over periods of weeks or months before they can hope for real and lasting benefit. Dr. Copeman believes, and many authorities would agree with him, that "Prognosis in the rheumatic diseases is twice as good to-day as it was 30 years ago, not so much owing to the introduction of new methods as to the renaissance of interest in the subject."

The 1934 Year Book of Pediatrics

Edited by ISAAC A. ABT, D.Sc., M.D., Professor of Pediatrics, Northwestern University Medical School; Attending Physician, Passavant Hospital. With the collaboration of ARTHUR F. ABT, B.S., M.D., Associate in Pediatrics, Northwestern University Medical School; Adjunct Attending Pediatrician, Michael Reese Hospital. Chicago: The Year Book Publishers, Inc.; London: H. K. Lewis and Co. 1935. Pp. 541. 9*s*. 6*d*.

WHILST no collection of abstracts, however carefully selected, can give more than a very uncertain indication of the year's progress in any subject, the Pediatric Year Book suggests an almost bewildering amount of activity. Needless to say, much of this activity gives rather the impression of Brownian movement than any ordered journey to any known destination; there is the usual collection of rarities, from purulent parotitis to rupture of the liver; there are the inevitable banalities culled from presidential addresses and leading articles. But amongst these are such investigations as those carried out on the prophylaxis and treatment of anterior poliomyelitis and whooping cough, which, though still in the experimental stage, give some cause for optimism. It would perhaps be churlish to point out that a disproportionate amount of attention is here devoted to the contributions of American authors, but we should certainly have to adopt an unduly modest view of English pædiatrics if we were to regard this Year Book as fully representative. Considered as a heterogenous collection of abstracts, however, most of which give a reasonably fair synopsis of the original, this book will be found to serve a useful function. The references appear to be quoted accurately and in consistent form, and the illustrations are for the most part well chosen, though not all printed the right way up.

French Medicine

By Prof. LAIGNEL-LAVASTINE, Professor in the Medical Faculty in Paris; Secretary-General of the International Society of Medical History; and Dr. RAYMOND MOLINERY, Gold Medallist of the Academy of Medicine; Member of the French Society of Medical History. Translated by Dr. E. B. KRUMBHAAR, Professor of Pathology, University of Pennsylvania. New York: Paul B. Hoeber, Inc. 1934. Pp. 187. $2.50.

THE American who remarked of the British Isles that they have no climate, only samples, would probably have been tempted to pass a somewhat similar judgment on this book. This in praise rather

than in criticism of it. For sampling is in itself excellent when exercised with the discretion which the authors have shown. They have undertaken to compress the history of French medicine into the *Clio Medica* series of primers on the history of medicine issued by the publishers, and any gratified ambition to deal with the subject in an encyclopædic frame of mind would have been disastrous. The portraits chosen for reproduction are, on the whole, illuminating, with the exception of certain groups of members of the Academy of Medicine whose appreciation requires a magnifying glass. The history is brought up to the present post-war period, with Leriche making surgery more and more physiological, and the leading physicians thinking more and more in the terms of surgery. The authors agree that French medicine is not what it was. "Its great periods of expansion were in the Middle Ages, the 13th century, after Louis XIV., and especially in the 18th and early 19th centuries .... now it only has one voice in the crowd. It must be admitted at least that in medicine its voice is always plain." An index of personal names and another index of subjects add greatly to the usefulness of the book.

Christine Murrell, M.D.

Her Life and Work. By CHRISTOPHER ST. JOHN. Preface by Lady BARRETT, C.H., C.B.E., M.D., M.S. London: Williams and Norgate. 1935. Pp. 133. 5*s*.

Christine Murrell entered the medical profession at a time when women doctors were still looked at askance, not only by their male colleagues, but by the general public. There were, it is true, quite a number of outstanding women practising in London, but the medical woman of that time had to have an ability considerably above the average in order to achieve success. This Dr. Murrell had without doubt, and in addition she had a forceful—though kindly—personality. She took a deep interest in all branches of her profession, though psychological illness and child welfare were the subjects that made the strongest appeal to her.

Dr. Murrell was fortunate in escaping the financial perplexities which confront most young people of either sex when faced with the prospect of establishing themselves in a good class practice. After gaining some valuable post-graduate experience she and her friend Dr. Honor Bone started practice together with such success that assistants and later junior partners had to be enlisted to cope with the work and thus one of the old-established London firms of medical women was founded. Dr. Murrell was an ardent feminist of the genial sort that has no antipathy to men—indeed she had perhaps more men than women among her personal friends. Her innate sense of justice led her to realise, however, the many difficulties which then, and even now, beset the professional woman when she tries to take her place alongside of her male colleagues. Her work for the Medical Women's Federation, of which she became both treasurer and president, was invaluable, but it is rather as a keen and prominent member of the British Medical Association that she will be remembered. She took an active part in the Association's medico-political activities, was the first woman member of its council, and it was as an outcome of the high esteem in which her work was held that she was elected last year, with the support of the Association, as a direct representative to the General Medical Council. Unfortunately the illness from which she died had already incapacitated her, so that she was unable to take her seat on the Council.

Dr. Murrell had a strong, resolute character, and did not tolerate fools gladly. She liked to get her own way, but even those who did not always agree with her admitted that her way was usually the best way. The affection and admiration that she inspired is shown by the fact that two memorials are being raised to perpetuate her memory. The first is a fund, which aims at equipping part of a new infant welfare centre at the St. Marylebone Health Society in her name, and the second project, is to form, under the auspices of the Medical Women's Federation, a Christine Murrell Memorial Fellowship for post-graduate study for young women practitioners. This volume provides a third and an appropriate memorial, and Miss St. John has given a charming and sympathetic account of an outstanding woman.

Lumbalanästhesie in der Geburtshülfe und Gynäkologie

By Dr. E. PREISSECKER. Vienna: W. Mandrich. 1934. Pp. 76. Fr.50.

THIS small book will appeal to those who are working on the physics and pharmacology of spinal analgesia more than those whose concern with the subject is mainly clinical. The latter will, however, be interested in the author's observation that headaches after spinal injection are less frequent in pregnant women than in others. On the other hand, he has noticed that the lowered blood pressure, often a trouble after spinal injection, is accentuated by the reduction of the abdominal pressure after delivery. It is especially for Cæsarean section that he values intraspinal analgesia, and he relates a series of 150 cases with four deaths, only one of which can fairly be attributed to the anæsthetic. This is, he finds, a lower mortality than that following general anæsthesia in similar circumstances. There were six deaths among the 150 infants, but in four of these he exonerates entirely the spinal injection. The biochemistry of the spinal fluid is discussed in detail, and a chapter is devoted to the pharmacology of drugs used for endothecal injection. The book is carefully compiled and contains much valuable information.

Urinary Analysis and Diagnosis

Sixth revised edition. By LOUIS HEITZMANN, M.D., formerly Professor of Pathology and Bacteriology, University School of Medicine, Fordham, New York. London: Baillière Tindall and Cox. Pp. 385. 22*s*. 6*d*.

THIS is a large book on a rather small subject, which should find a place on the shelves of every clinical pathological laboratory and side-room; in somewhat small bulk and at a correspondingly lesser price it might have made appeal to medical practitioners, students, and nurses alike. The material is well and clearly set forth; the illustrations are lavish and serviceable. On the whole the teaching is reliable; in the section on extraneous matter in the urine it is unfortunate that the illustration described as showing "normal fæces" depicts among other things, a fragment of striated muscle—one of the few findings in the fæces invariably significant of some morbid condition. If the book were somewhat reduced in bulk it would make an even wider appeal.

Clinical Laboratory Methods and Diagnosis

By R. B. H. GRADWOHL, M.D., Director of the Gradwohl Laboratories and of the Laboratories, St. Louis County Hospital. London: Henry Kimpton. 1935. Pp. 1028. 36*s*.

THE design of this book is ambitious and its scope considerable. No procedure which a worker in a hospital laboratory may be called upon to perform escapes notice; and useful sections will be found on the identification of poisons, the performance of post-mortem examinations, the preparation of extracts for allergy tests, and on many other procedures rarely present in works on general laboratory technique. Unfortunately, in common with other authors of similar works, Dr. Gradwohl has found difficulty in deciding whether he would write a text-book of pathology or of laboratory procedures. Where he roams into the field of pathology he is not a particularly illuminating guide; even on the purely practical side his descriptions of technique and methods are not always clear. More rigorous editing is required throughout. Slips such as that which occur on p. 512 should have been avoided. Here in one line it is stated that "neutral fats and fatty acids are soluble in ether; combined fatty acids or soaps are not," and a little further down that "neutral fat, free fatty acids and soaps are soluble in ether." This sort of careless writing is likely to discourage the inquiring student.

This book is attractively produced; the illustrations—colour plates, line drawings, and photographic engravings—are among the best we have met with in any book of this sort. The author makes a well-deserved acknowledgment of the skill of Mrs. Addine G. Erskine who drew and arranged them.

Bee Venom Therapy

By BODOG F. BECK, M.D. London: D. Appleton-Century. 1935. Pp. 238. 18*s*.

IN books as well as in buildings the Americans are inclined to do things on the grand scale. From its respectful dedication "To the Pathfinders of Bee Venom Therapy" to its 11 pages of bibliography this work is a magnum opus in miniature and, could they only know of it, would make every right-thinking bee carry her sting more proudly. The author's industry has brought together information about every possible aspect of bee venom, and the only criticism is that he has failed entirely to separate the grain from the chaff. A critical summary at the end of each chapter would have greatly increased the value of the book. In spite of this fault, a great deal of valuable information has been collected. The first part of the book has chapters on the medical history of the bee, animal venoms, bee venom and its effects, the results of bee-stings, sensitivity, the treatment of bee-stings. Part II. is an enthusiastic account of the results of apitherapy in arthritic and rheumatoid conditions.

We learn that the effective part of the venom is a very toxic organic base, as yet unidentified, and that the irritation of the sting is said to be due to volatile oils. In the production of injectable bee venom these oils and the protein are removed, the latter process being a secret of the manufacturers; 25,000 bees are required to produce one milligramme of pure venom. A study of the surprisingly large number of fatal cases caused by bee-stings leads to the conclusion that allergy must play the greatest part, and the sensitivity may vary very greatly between different individuals and in the same individual at different times. Adrenaline preparations seem to be the favoured remedy for severe general effects. All local treatments of bee-stings are, in the author's opinion, unsatisfactory, and we must comfort ourselves with Cicero's advice that "to mind a bee-sting is a truly feminine trait."

As to the value of bee venom therapy in arthritis and allied conditions, no scientific appraisal of its value is attempted, but at least all the information is given from which the inquiring reader can form his own conclusions.

Clinical Pathology and the Technique of Collecting Specimens

By WILLIAM SMITH, M.A., M.D., B.Chir., Pathologist to the Miller General Hospital, Greenwich. London: J. and A. Churchill Ltd. Pp. 158. 5*s*.

Dr. Smith seems to have been impressed by the number of specimens unsuitable for the particular examination demanded which are submitted to his laboratory. He has therefore written this book to explain to practitioners and others concerned with the taking of specimens the way in which these should be collected. The intention is laudable; one can but wish him luck. But we fear that to secure the correct approach of the practitioner to the laboratory will require something more than a series of lectures on the collection of specimens. Such lectures will not destroy the faith of those who, having withdrawn specimens of blood and urine in the most correct manner, submit them to the pathologist in the hope that his incantations will solve clinical problems.

The book should be of value to nurses and laboratory technicians entrusted with the collection of specimens in the wards.

Lodgings for Twelve

By H. H. BASHFORD. London: Constable and Co. 1935. Pp. 311. 7*s*. 6*d*.

Dr. Bashford's prose has a quality which recalls that of Dr. John Brown and gives conscious delight to the discriminating reader; the other sort of reader will get almost as much pleasure from these essays without knowing quite where it comes from. The author introduces us to people he has met as a child of the late Victorian era, as a boy emigrant farming in Canada, as a medical student at the largest of the London teaching hospitals, as a locum tenent, and in "a more or less open house" of his own. Many men of varied experience will have met equally interesting people and have passed on without appreciating the full flavour of their peculiarities; few indeed would be able to convey this flavour to others with such a sure touch. We enjoyed all the essays immensely and reopened the book to read again about Dr. Coley and Dr. Knight—a contrast in general practitioners, about the gallant life of Aunt Felicia, and about Lucy Saltoun; rereading both for the charm of the writing and for the wickedly apt sketches of two or three fellow students of Dr. Bashford in the very early years of this century. We looked in vain for encounters or incidents arising during his long medical career in the civil service, and can only hope that these are being reserved for publication at such a time, even if this is still remote, when they can neither infringe conventions nor cause embarrassment to colleagues or successors.

THE LANCET

LONDON: SATURDAY, JUNE 1, 1935

TO COUNTER THE ILLS OF SOCIETY

NATURE recognises no watertight compartments and yet presents so vast and complicated a structure that man's mind cannot compass its entirety. Pasteur said, "There is only one way of seeing things rightly and that is seeing the whole of them"; but specialism has become a necessity if knowledge is to increase. In no branch of applied science is this dilemma more evident than in medicine; we are continually faced with the danger that a pursuit of scientific truth may impair our sense of perspective, so that eventually we shall come to resemble the man who, knowing more and more about less and less, ended by knowing everything about nothing. The moral is that pragmatism still has a claim and that the patient is greater than his disease; and in his Heath Clark lectures Prof. MAJOR GREENWOOD has been pointing this moral with characteristic lucidity and incisiveness. His two addresses on the Temperamental Factor in Industry were in fact concerned less with industry than with life as a whole. Industry is but a function of man's economic existence; it depends on factors external to itself and it exercises its influence throughout our modern society: and if Prof. GREENWOOD chose to employ a limiting title for his discourse it would be a mistake to ignore his words simply because we may have no immediate industrial affinities. What he said on these two occasions carries a message which none of us can properly neglect.

GALEN taught the indissoluble unity of mind and body, and to this extent we are urged to return to the spirit of the ancients. We are reminded that the temperamental constitution of man is a personal characteristic which determines not only his way of life but the course and prognosis of his diseases, and we are shown how in more recent times medicine has tried to materialise—and to interpret in physical terms—something which is essentially psychological. The physician who sees in statistical data clear-cut and ready-made paths to the surmounting of individual difficulties is forgetting that statistics deal with group phenomena and with probabilities that are rendered valid only when the group is of a size statistically significant. If in addition he forgets that the science of living, with all its emotional actions and reactions, is still in the phase of gestation he is doing science a disservice and himself an injury. It is the fusing of emotion and reason in balanced harmony that makes for vivid and creative life; and medicine has not entirely ignored this fact. At the same time the mere realisation that patients have important emotional reactions is valueless unless one can see how these reactions are "touched up" by circumstances: the mere addition of psychological medicine to the medical curriculum will avail little unless we aim at making the student interested in the economic, educational, and industrial background of the patient's life. Prof. GREENWOOD says that people are unhappy in mind under the modern industrial system; H. G. WELLS says that the mass of mankind, halting in intellectual puerility, constitutes the greatest menace to civilisation; Dr. CRICHTON-MILLER, in the address appearing elsewhere in this issue, says that the ultimate stewardship of mental health lies with the individual himself. In these three statements we not only get a glimpse of the track that medicine must follow—namely, in helping to readjust the patient's psychological balance—but we see also how we must bring to bear on educational technique the results of psychological research. If man is unhappy under a system and if that unhappiness produces, as it now certainly does, varying and widespread effects on body and mind, then we require an adult-minded, psychologically poised and intellectually courageous body of men and women to bring about a change.

Medicine on its physical side can still be practised within four walls; but on its mental side—on the side that views the whole man as something greater than his symptoms—its boundaries are coextensive with life itself. Let us specialise by all means; let everyone contribute something detailed, exact and necessarily limited to the pool of knowledge; but at all costs let us also maintain at a high level the general culture of those who practise medicine. Only in this way can we possibly meet the demands that modern life places before us and help to lighten the burdens that it lays upon our patients. Miss MAY SMITH, D.Sc., in the concluding lecture of this series, showed how specific, and (to some) apparently trivial, maladjustments can cause a flare-up of emotional conflict. She believes that if we could break away from the idea of "nervous" breakdown and call it "emotional" breakdown we should be helping to clarify our pathology. Dr. CRICHTON-MILLER, on the other hand, with less regard for current feelings, would call them all "mental." Either term will serve, however, provided only that it will widen and deepen understanding of the present situation. Temperament is not yet amenable to statistical evaluation; admittedly knowledge is greatly lacking. But we know already, without room for doubt, that a very high proportion of the sickness wastage in what we term an industrial society results primarily from temperamental maladjustments and from the influence of modern life on minds which have little real insight into themselves. We are passing through one of the great upheavals in cultural history, when events move fast and changes are both profound and rapid. Besides helping people to understand themselves the medical men and women of to-day are in duty bound to pay attention to the world around them, so as to be able, wherever possible, to counter the ills and contribute to the moulding of society, that it may conform more nearly to the needs of man.

THE LISTER INSTITUTE

THOSE who are inclined to deplore the academic preoccupations of workers in medical research institutes not attached to hospitals will find little reason for discontent in the annual report of the Lister Institute for 1934–35. It so happens that this year many of the results obtained by experiment in the different departments are likely to be directly applicable in the practice of preventive or curative medicine. For example the successful passage of vaccinia virus in a cell free medium, though still capricious, gives hope of a revolution in the future methods of cultivation of this virus, and the use of elementary body suspensions as a substitute for ordinary vaccine lymph is also of the utmost practical interest. Animal experiments have shown these suspensions to be in every way comparable to ordinary lymph; they possess the advantage of bacteriological sterility and represent the virus in the purest form available. It is proposed to make human vaccinations with these suspensions when opportunity offers. An estimation of the potency of human convalescent sera in poliomyelitis is being made in collaboration with the Danish State Serum Institute; the neutralising value of a number of samples of serum from Danish cases of poliomyelitis at different periods following recovery from the disease is being tested on monkeys and compared with serum obtained at Elstree by immunisation of horses with the virus. The collaboration of workers from the institute with clinicians has suggested that the cause of acute rheumatism may be a virus and their preliminary observations have already been printed in our columns. We have also published observations on the new antigen of *B. typhosus*, named Vi because of its close association with virulence, and to the clinical confirmation of the importance of the presence of Vi antigen in vaccines injected prophylactically against infection by *B. typhosus* and in sera used in the treatment of infection by the most common type of this bacillus.

The investigation on male adult rats of the scope, applicability, and trustworthiness of the balance-sheet method for estimating the biological value of proteins has been completed. With this method, in which measurement is made of the power to maintain nitrogenous equilibrium over short periods, the influence on biological value of altering the proportion of protein in the diet has been studied in the proteins of wheat, maize, and milk. In all cases an increase in the proportion of protein in the diet has been found to lower the biological value—i.e., its utilisation has been less economical. A special study has also been made of caseinogen, both before and after undergoing the processes of heating and purification, as ordinarily carried out before inclusion in diets used in vitamin work. Purification or prolonged heating at 120° was found to have no significant effect on the biological value; heating for long periods at 150°, however, lowered both the digestibility and the biological value. The vitamin-B complex has received considerable attention, with the result that vitamin B_2 is now held to have two constituents, both necessary for the maintenance of growth and health; the one, a heat-stable lyochrome pigment, appears to be connected with a generalised skin affection seen in young rats deprived of vitamin B_2; while the other is a supplementary substance (B_6) which occurs in yeast extract and appears to be specially required for the prevention of the more florid symmetrical dermatitis called "rat pellagra" and which is regarded as the analogue of the human disease. If, however, B_6 has entered the lists, B_4 has left them, for no confirmation could be found of the existence of any antineuritic factor other than B_1. The occasional incidence of local reactions had been reported following the injection of staphylococcus toxoid for the immunisation of patients. The toxic filtrate obtained by the method of cultivation in a cellophane bag is relatively more free from non-specific constituents than that which is prepared from the broth-agar medium, and as the product has been proved experimentally to be an efficient immunising agent, this technique has been adopted for the staphylococcus toxoid supplied for clinical tests. The statement that globulin preparations from human placentæ contain immune substances which have a neutralising action on the virus of measles is being examined. A clinical trial of two batches of human globulin solution, each of which has been prepared from a large number of placentæ in order to equalise the varying antibody content, will be undertaken in the autumn, when a recrudescence of measles is expected to occur.

Only a few even of those researches with a direct clinical bearing have been mentioned; the prophylaxis of tetanus, the mechanism of urine production, the symptoms which follow adrenalectomy in rats, and the effect of gamma ray irradiation on cultures of a protozoon, are among the many other problems under investigation. More than 30 papers have been published from the institute in various scientific journals during the year and several others are now prepared for press. It is clear that under the able direction of Prof. J. C. G. LEDINGHAM, F.R.S., the staff of the four departments of the institute are extending their activities in every direction which shows promise, and by collaborating with each other and with workers elsewhere are making the utmost use of the available accommodation and resources.

THE THYROID GLAND IN HEALTH AND DISEASE

NINE years ago Prof. HARINGTON announced his synthesis of thyroxine, and the biochemists, with others who were in a position to appreciate it, experienced the thrill of satisfaction that is evoked by a beautiful and valuable chemical achievement. Since then he has been occupied with the more difficult task of elucidating the chemical changes involved in the physiological and pathological activity of the thyroid cells—deciphering the chemical language in which the thyroid talks. His Oliver-Sharpey lectures, appearing in our last

issue and in this, embody some of his most recent results, and introduce certain speculations that may lead to further discoveries. Thyroxine, it is now agreed, is the important vehicle of the gland's influence, both in health and in Graves's disease, and PLUMMER's theory, that the diseased thyroid produces an abnormal and peculiarly toxic variant of thyroxine, is now being abandoned both in this country and in America. All the manifestations of hyperthyroidism, not excluding exophthalmos, can be produced experimentally by thyroxine, and all the signs and symptoms of myxœdema can be removed by it. Its action in raising the basal metabolic rate of myxœdematous patients has indeed been used as a method of physiological assay, and has helped to reveal a curious discrepancy. The activity of a sample of thyroid substance given by mouth is about twice as great as that of the thyroxine it contains, and seems to be related to the total iodine content of the sample —not, as might have been expected, to the thyroxine-iodine content, which is approximately half the total. Thyroxine in combination appears to be more potent than free thyroxine; and it must be in combination, not merely by simple peptide linkage with some other amino-acids, but with other amino-acids plus diiodotyrosine, which is the iodine-containing thyroxine-precursor found along with thyroxine in the thyroid gland. The last point is as yet hypothesis, but if it is sustained it will influence the method of assay of thyroid preparations for pharmaceutical purposes. In America the activity of a preparation is taken to be proportional to its total iodine content; the last edition of the British Pharmacopœia attempted greater accuracy by taking thyroxine-iodine content as the measure, since it can be a variable fraction of the total. It now seems that the American method may be after all a nearer approximation to the truth.

From the biochemist's point of view the first riddle of hyperthyroidism is the familiar and mysterious effect of iodine. The normal thyroid passes through functional cycles, from rest to activity, with hypertrophy and hyperplasia of its cells and outpouring of secretion, and thence by involution to a colloid state in which the secretion is largely stored. An active or overactive stage can be induced in animals by restriction of their iodine intake or by partial extirpation of the gland, and is present in man in hyperthyroidism. In all these conditions iodine administration causes the gland histologically to involute, and in human hyperthyroidism involution is accompanied by a diminution in intoxication. Prof. HARINGTON is inclined to accept MARINE's view that this effect is largely mechanical, the distension of the follicles with colloid hindering the absorption of secretion by the lymphatics, though the idea that some secretion is diverted into colloid storage until the storage room is taken up would equally well explain the apparently temporary nature of the clinical effect. In either case the characteristic feature of the thyroid in hyperthyroidism is not its anatomical structure but its functional "diarrhœa" of secretion, which may be a little modified but is not fundamentally altered by iodine. MEANS and LERMAN [1] agree fully with that general conception, but from a recent study of over 500 patients in the thyroid clinic of the Massachussetts General Hospital conclude that iodine has more than a merely temporary effect; accurate observations indicate that it applies a gentle but steady inhibition to the outpouring of secretion, so that the "diarrhœa" proceeds with its characteristic spontaneous waves of varying intensity but at a somewhat lower level so long as iodine is being given. This differs from HARINGTON's view that the iodine effect is purely temporary and cannot be elicited a second time, and it is important from the theoretical side that the issue should be settled. Practically and clinically however, it is clear that iodine can only ameliorate, and that to a limited degree; it does not strike at the prime cause of the trouble.

Can the prime cause of the trouble, then, lie outside the thyroid? Is the "diarrhœa" of the gland due to an external stimulus? The thyrotropic hormone of anterior pituitary extracts comes at once to mind, for it can produce in animals both hyperplasia and increased secretion of the thyroid. But it does so only for a week or two, and after longer continued injections loses its effect. J. B. COLLIP, seeking to explain this, has been able to produce an antiserum to the hormone by prolonged administration of it to a horse, and has adumbrated a whole series of anti-hormones which are to play opposite the recognised hormones on the endocrine stage. Prof. HARINGTON shrinks from this alarming mating of immunology with endocrinology, and wonders whether—perhaps even hopes that—the "antibody" may prove to be a hormone from the suprarenal cortex or some equally respectable source. Meanwhile the cause of Graves's disease still eludes us, and most likely "involves complexities ... as yet unsuspected." Not a few of those, we may suppose, will be unravelled by the precise and painstaking methods of the biochemist, so well exemplified in Prof. HARINGTON's researches.

AT a general meeting of the Royal Society of Medicine held on May 21st, Sir StClair Thomson was unanimously elected an honorary fellow. It was the only new British nomination this year. With a membership now approaching 5000, the Society has only 23 British honorary fellows. Sir StClair Thomson is the first laryngologist—indeed, we believe, the first specialist—on whom this distinction has been conferred. The society has 27 honorary foreign fellows and of these one, viz., Prof. Chevalier Jackson, is a laryngologist. No other specialty has received such distinction. The foreign fellows elected this year are Profs. Sigmund Freud (Vienna), Joseph Jadassohn (Zurich), Edouard Jeanselme (Paris), G. R. Minot (Harvard), and R. F. J. Pfeiffer (Breslau). Prof. Jeanselme, as our Paris correspondent noted last week, died before receiving the honour.

Colonel W. P. MacArthur has been appointed to succeed Major-General R. M. Ainsworth as commandant of the Royal Army Medical College on Sept. 26th next.

[1] Means, J. H., and Lerman, J.: Jour. Amer. Med. Assoc., March 23rd, 1935, p. 969.

ANNOTATIONS

UNEMPLOYMENT AND MEDICAL BENEFIT

WE referred recently to the problem which arises out of the National Health Insurance Act of 1932, under which many insured persons who have been unemployed for a long period are expecting to lose their pension rights at the end of 1935. The Government's new National Health Insurance and Contributory Pensions Bill, which was introduced on May 23rd, is intended in a large measure to remove this fear and to put on a new permanent basis the means for continuing the pension rights of the unemployed and to protect them against a reduction or suspension of cash benefits under the health insurance scheme. All insured persons on ceasing to be insurably employed have at present a free insurance period averaging twenty-one months. The Bill provides that during this period the insured person will be fully protected for pension and health insurance benefits. Beyond the period of grace any person who has been continuously insured for ten years before the date on which he ceases work, and is now unable to obtain insurable employment, will have his insurance continued from year to year and, however long this ensuing period may be, he will be sure of his pension rights, of medical benefit, and of additional treatment benefits. But he will not be entitled to cash benefits, for which, however, he can requalify if he re-enters insurable employment and pays twenty-six insurance contributions within two years. The charge in respect of pensions will fall wholly on the pensions account, but it is anticipated that the existing financial provisions will suffice and that no additional demand will be made upon the Treasury. As regards the remission of arrears of contributions, the cost, some £1,500,000 per year, will be met from an arrears fund which will be provided as to 50 per cent. by an annual Exchequer grant and as to the remainder by a levy on the approved societies—and in effect upon the insured population. Each society will contribute according to the amount of unemployment and will receive back a grant in proportion to the amount of unemployment among its own members; the arrears fund will thus be in effect a means of sharing the losses due to unemployment. The solution of the difficulty has been achieved broadly upon the lines set out on p. 1128 of THE LANCET of May 11th, with the modification that instead of the whole cost falling upon approved societies half of it will be met by an Exchequer grant. It is matter for encouragement that since 1932 the percentage of unemployment among persons insured under the health provisions has decreased from 14½ to 13.

Before the Bill was introduced the Government actuary reported that in respect of the Pensions Acts solvency would be achieved until 1946, with a small margin, if the annual contributions by the Exchequer were maintained at the sums prescribed for that period by the Statute, under which in 1934–1935 the amount is £13,000,000 rising by £1,000,000 a year until 1942–1943 when it will remain stationary for four years at £21,000,000. If the average rate of unemployment for the next ten years should prove to be 13 per cent., the average rate for the last financial year, the additional cost involved under the new Bill, so far as pensions is concerned, will be covered by the pensions account until March, 1946. It is interesting to note that the finances of the pensions scheme have benefited by the fewer deaths among men and especially among married men, with the result that fewer claims have been made than had been expected. This profit must, however, have been diminished by the longevity of widows.

NARCOTIC TRAFFIC IN EGYPT

THE annual report of T. W. Russell Pasha on the work of the Egyptian Narcotics Intelligence Bureau for 1934, if not as sensational as usual, is full of statistical information, heavily documented and illustrated. It deals less with external illicit traffic and more with rounding up small traffickers in opium, heroin, and hashish throughout Egypt. Smuggling still continues, despite the vigilance of the police under Russell Pasha's able direction; Suez is a hotbed of the traffic and it is alleged that not less than 3000 out of a population of 40,600 are in some way connected with the contraband trade. Numerous seizures of hashish and heroin are reported, often concealed with an extraordinary amount of ingenuity. A new feature is the growing habit of resorting to "black tea" as a narcotic—that is, tea repeatedly boiled until a heavy dark brown residue is obtained possessing narcotic and toxic properties which render the addict incapable of work and result in digestive disorders. This black tea habit is said to have arisen from the restrictions placed upon the use of hashish; the peril arising from the latter, by way of cigarette smoking (marihuana) in the United States and Canada, is now engaging the attention of the Opium Advisory Committee at Geneva. The Egyptian Government would support a world-wide outlawing of Indian hemp, but this apparently would not be acceptable to the Indian Government, owing, it is said, to its association with certain religious rites of the Hindus.

FRACTURE DISLOCATION OF THE LOWER RADIAL EPIPHYSIS

INJURY to the lower epiphysis of the radius is comparatively common in boys. The lesser degrees of displacement give rise to little or no anxiety, but every now and again a case is seen with a considerable backward dislocation of the epiphysis, usually associated with splintering of the shaft posteriorly. The greater the surgeon's experience the less will be the confidence with which he attempts a closed reduction; for it will often fail even after repeated attempts under full general anæsthesia. On the other hand, although a poor position is the final result of treatment, ultimate deformity of the wrist which can be traced to previous epiphyseal injury is *not* a condition met with clinically. Struck by the fact that he has never seen such a deformity in his work in the out-patient department of the Boston City Hospital, A. P. Aitken [1] has re-examined 58 patients at periods of 2–9 years after their discharge from treatment for various degrees of fracture and fracture-dislocation of the lower radial epiphysis. Of the 58 patients, 8 were girls and 50 boys, and this corresponds with the experience of other observers; thus E. Bergenfeldt [2] described a series in which there were 118 boys and 18 girls. In 2 of Aitken's cases the injury was bilateral; in 28 the posterior edge of the diaphysis was damaged, and in 19 there was an associated injury to the ulnar styloid. No attempt at reduction was made in 17, but in all the others the position was considered to

[1] Jour. Bone and Joint Surg., April, 1935, p. 302.
[2] Acta Chirurg. Scand., vol. lxxiii., suppl. xxviii.; see THE LANCET, 1934, i., 308.

require improvement. In 7 cases there were two attempts at reduction, and in 4 cases there were three. Osteotomy was carried out in 4 cases. The results of the 60 fractures, as estimated at the time of discharge from hospital, are summarised thus: normal to good position, 26; slight displacement, 20; fair to poor position, 14. At the time of re-examination 2–9 years later no deformity could be found in any of them, even when the original displacement had involved a quarter or half the thickness of the shaft. Malposition in this injury does not persist, and we seem to be safe in predicting that in two or three years at latest the normal relationship of epiphysis and shaft will be restored. The other question which Aitken investigated was the effect of epiphyseal injury on the growth in length of the radius. He found that premature ossification and retardation of growth did undoubtedly occur, but were on the whole negligible. Isolated cases have been reported in which conspicuous deformity persisted, but these he attributes to excessive damage at the time of injury. The injury must certainly be very severe, for osteotomy through the epiphysis had been performed in one of Aitken's patients without giving rise to any appreciable shortening, and repeated manipulation seems likewise to be harmless in this regard. Where shortening was measurable, it was only about 1/16 inch; in but one patient was it as much as ⅜ inch. A few cases, indeed, showed the opposite effect—a slight stimulation of growth.

It is interesting to note that these results agree with those reported by Bergenfeldt for radial epiphyseal injuries.[2] In view of the ultimate history of the cases Aitken has good reason for thinking that where one attempt at accurate reduction fails, repeated manipulation is unnecessary. He believes that the open operation of osteotomy is not justifiable.

AMERICAN COMMENT ON THE OSTEOPATHS BILL INQUIRY

In his presidential address to the General Medical Council on Tuesday afternoon, Sir Norman Walker recalled the evidence which he gave before the select committee of the House of Lords when considering the registration and regulation of osteopaths. "I took the opportunity," he said, "to expound the merits of our British system of one register for qualified medical practitioners, and am hopeful that the system which has worked, and worked well, for nearly eighty years will be maintained." Sir Norman also recalled in his address the words of an earlier president, Sir Richard Quain, who forty-three years ago said it was recognised more and more every year that the Council is doing all in its power to secure the higher education of the profession, and to elevate and maintain its character in all that is essential in connexion with the welfare of the public. "In some other countries," Quain added, "these duties devolve on Government officials: happily here they are placed in our own hands. . . ." In a leading article in the current issue of the *Journal* of the American Medical Association, the editor remarks, "Great Britain seems to have realised the value of its own method of control," and he adds, with obvious regret, "Apparently it still requires some extensive education of both legislators and the American people to bring them to a realisation of the necessity for basic science legislation in this country." In America, in contrast to this country, the practice of healing is forbidden except to those who are registered, and consideration of this fact should, the *J.A.M.A.* says, emphasise to every intelligent person the necessity for developing in the United States, through the establishment of basic science laws, a minimum standard of education for all who propose to heal the sick, regardless of the method by which such healing is to be brought about. There is in the leading article a thumbnail picture of the result of the inquiry which, it is remarked, "occupied a good many days and cost a lot of money. It brought out the fact that the proponents of the legislation were not capable of framing a definition of osteopathy that would distinguish it from other healing cults. It made clear the fact that the osteopaths claim that their art and practice cover the whole field of medicine, and that osteopathy is based on a pathology and a theory of causation which are peculiar and in no sense of the word established. Although the osteopaths were willing to accept certain limitations of their work and to stress spinal manipulation, they claimed the right to use surgery of all degrees and drugs of many varieties. Indeed, they claimed equally to prevent disease by spinal manipulation and to limit infectious disease by this process."

THE BLINDING FILARIA IN AFRICA

Blinding infection with the filarial worm *Onchocerca volvulus* has been found by J. Bryant[1] to be a major health problem in that part of the Sudan which drains into the Bahr-el-Ghazal and the Sudd regions of the Upper Nile. An endemic blinding disease seems to have been present locally in this province for at least sixty years, but it now has a wide though patchy distribution, and where it exists at all its incidence is astonishingly high and increasing. The most striking instance quoted is that of a tribe on the Lau river, Yirrol district, among whom the disease was unknown in 1933 and where now 8 per cent. of the adult taxpayers have had to be exempted from taxation because of blindness. This last takes two forms. One is a keratitis with lack-lustre, and later vascularised and opaque, cornea, iritis and choroiditis, with slow obliteration of the pupil, and with microfilariæ present throughout the eye; it is accompanied by intense photophobia and may progress slowly for years. The second is initiated by a short-lived lacrymation, passing in two or three weeks into night-blindness and reaching its climax in two or three months, by which time blindness may be complete, or partial, or only complained of at night; the lesions are irregular atrophy of the retinal layers, particularly of the nerve-fibres, with pigment masses in or on the retina, but no microfilariæ in any structure of the eye. Yet there is reason for believing that this second form is onchocercal in causation; for whereas among 750 adults paraded for sleeping sickness inspection only 9 per cent. showed manifestations of onchocerciasis, the incidence of such manifestations in cases of "Sudan blindness" (as Bryant calls it) was 58 per cent. *Simulium damnosum*, an established carrier of onchocerca infection in Africa, swarmed in these parts, the foci of disease being rocky streams commonly in the forest country. The search for onchocerca as the cause of the local blindness was made on the suggestion of J. Hissette,[2] who has shown what a scourge this worm has become within the last few years by producing wholesale blindness of inhabitants of certain parts of the Belgian Congo.

It may be recalled that E. Brumpt, after investigating the blinding filaria of Guatemala, held that it differed—somewhat in morphology and strikingly in its ocular effects on man—from *O. volvulus* for long known

[1] Trans. Roy. Soc. Trop. Med. and Hyg., 1935, xxviii., 523.
[2] Ann. Soc. belge de méd. trop., 1932, xii., 433.

in Africa, and that he named the New World form *O. cæcutiens*. As to morphology, J. H. Sandground,[3] after examination of onchocerca worms from various sources in impressive numbers, has found no constant difference between those from Guatemala and those from Africa, while as to lesions, the facts quoted above show that the production of ocular lesions does not, in fact, distinguish from one another the forms found in the two hemispheres. *Onchocera volvulus* is, then, the valid name for this parasite of man. What causes it to produce in certain parts of the world these devastating effects on the eye is unknown. Richard C. Strong[3] notes that in Guatemala, which place has given the worm its title of "blinding," only 5 per cent. of the infected suffered from ocular lesions. In the affected spots in the Sudan, however, the percentage of infected so suffering is clearly many times greater, and is showing a disquieting rate of increase. Accordingly the obligation on its Government to take active steps for the closer investigation and stronger control of this infection is of corresponding and pressing urgency.

THE LAURENCE-MOON-BIEDL SYNDROME

THE association of obesity, hypogenitalism, mental retardation, and polydactyly with retinal pigmentation may at first sight seem at least as improbable as the existence of Othello's men whose heads do grow beneath their shoulders. On embryological grounds it is hard to link the mesenchymal abnormality which results in the polydactyly and other skeletal defects with the retinal and diencephalic defects which are epiblastic in origin. The complete syndrome is, indeed, of extreme rarity, and in some of the family groups recorded is only seen spread through different members of the family. Cockayne, Krestin, and Sorsby[4] have reviewed the literature of this curious condition, adding two family groups to the 30 or so examples already published. Out of the first family group of ten, three (and possibly four) members were found to be affected, whilst of the second group of four members three were affected. In the first instance no one patient showed the full syndrome, although all the components of the syndrome were found between the three affected patients. In the second group the eye changes were those of cerebromacular disease. The authors discuss the possible relationship of the condition with juvenile amaurotic idiocy (Batten-Mayou disease), since certain characteristic eye changes may occur in both; but there are, as they point out, definite differences in the onset, course, neurological signs, and sex incidence, there being an excess of males affected with the Laurence-Moon-Biedl syndrome, whereas no such preponderance exists in juvenile amaurotic idiocy. They also conclude from the evidence available that the Laurence-Moon-Biedl syndrome is inherited as an autosomal recessive. In the complete sibships recorded, information as to the presence or absence of consanguinity of parents is given in 23 instances; of these, 6 were the result of first-cousin marriages and 3 of second-cousin marriages, whilst in the remainder there was no blood-relationship. Thus 43 per cent. were derived from first- or second-cousin marriages. There is no instance of the parents being affected with the syndrome. The authors also incline to the suggestion made by Rieger and Trauner[5]—and elsewhere independently by Cockayne[6]—that the epi- and mesoblastic elements of the syndrome are both recessive and due to mutations in two genes in the same chromosome.

[3] Onchocerciasis, with special reference to the American form of the Disease. Contributions from Dept. of Trop. Med. and Inst. for Trop. Biol. and Med. (Harvard Univ.), No. 6. London: Oxford University Press, 1934. Reviewed in THE LANCET, March 23rd, 1935, p. 689.

[4] Cockayne, E. A., Krestin, D., and Sorsby, A., Quart. Jour. Med., April, 1935, p. 93.

[5] Rieger H., and Trauner, R., Zeits. f. Augenheilk., 1929, lxviii., 235.

MALARIA IN CEYLON

A RECRUDESCENCE of malaria has been reported this spring in those parts of Ceylon affected by the epidemic. The symptoms have been of a milder type generally, and cerebral cases and convulsions have been rare. No information is available at present to indicate whether there has been a fresh increase in mosquito-breeding, leading to reinfections, or whether these cases are simply relapses. That the recrudescence has not been maintained is shown by a reduction in the number of reported malaria deaths from 19,059 in March to 15,933 in April. The full history of the epidemic will be awaited with great interest; both from the epidemiological standpoint—which should provide Colonel J. G. Gill, with striking parallels and equally striking contrasts with his experience in the Punjab—and from the standpoint of treatment. The situation has afforded an opportunity for the clinical test of the latest remedies upon a grand scale, and the issues at stake, as between the growers of quinine on the one hand and the manufacturers of synthetic antimalarial drugs upon the other, are of immense importance. It is to be hoped that any conclusions reached upon these issues may rest on a truly scientific assessment of the evidence.

DENERVATION OF THE KIDNEY

RENAL sympathectomy, on which Mr. S. Harry Harris, of Sydney, opened a discussion at the urological section of the Royal Society of Medicine last week, has only recently attracted attention in this country. Mr. Harris has been carrying out denervation of the renal pedicle for over eight years and is in a position to speak of the limitations of the operation as well as of its uses. The condition in which he finds it act most favourably is one for which he has coined the somewhat awkward term "renal sympathetico-tonus." How this overaction of the sympathetic nerves of the kidney is brought about he does not know, but its results can now be described with accuracy. Mr. Harris divides them into three stages.[7] First, a phase of irritability when the patient complains of colicky pains and the pyelogram shows a state of systole, the pelvis and calyces being contracted and the renal papillæ flattened out by the increase of intrapelvic pressure. Hæmaturia, which is a not infrequent complication of this phase, probably results from congestion caused by the contraction of the intrinsic muscles of the kidney. The second stage is one of exhaustion or diastole. Instead of occasional attacks of colic, the patient has a dull aching in the loin, increasing occasionally to a sharper pain. Pyelography shows the renal pelvis and calyces in a state of diastole. The third or final stage may be described as retention with overflow; Harris compares it to Hirschsprung's disease of the large bowel. In all three stages the injection of eserine has a favourable effect, relieving the spasm of the first and—provided there is no organic obstruction—provoking the dilated pelvis to empty itself in the later stages. After describing the technique of denervation of the pedicle, he deprecated the indiscriminate use of the operation. Subsequent speakers in the discussion endorsed this risk; Mr.

[6] Inherited Abnormalities of the Skin and its Appendages, London, 1933, p. 40.

[7] Harris, S. H.: Renal Sympathectomy and Renal Sympathetico-tonus, THE LANCET, Feb. 23rd, 1935, p. 424.

Hugh Lett foresaw a danger of denervation being used for the innumerable cases of backache of doubtful origin seen in out-patient departments. Mr. J. B. Oldham, of Liverpool, confirming Mr. Harris's findings in general, mentioned other conditions in which theoretically sympathectomy might be serviceable. The renal pedicle, he said, contained three types of nerves, those running to the blood-vessels, those supplying the musculature, and sensory nerves. Since the majority of the nerves terminating in the vessels were vasoconstrictor, division would bring about a condition of vasodilatation. It was therefore logical to employ renal sympathectomy in reflex anuria, and after pyelo-nephro-lithotomy in order to increase diuresis and diminish the risk of a recurrence of stone. As, however, he had found that diuresis was preceded by a period of reduced secretion, he no longer considered sympathectomy appropriate in the treatment of reflex anuria. If, as Mr. Harris suggested, hæmaturia might be a result of contraction of the intrinsic musculature of the kidney, denervation was a possible treatment for that mysterious condition, essential hæmaturia. He agreed with Mr. Harris that the operation should cause no ill-effects, although in three cases in which he had attacked the pedicle by the abdominal route acute dilatation of the stomach had followed. In the near neighbourhood of the renal pedicle were sympathetic fibres running to other viscera; it must be remembered that both the diseases and the results of the operation might not be limited to the kidney itself. Exaggeration of the knee-jerks might, he thought, be a useful sign in diagnosis. The consensus of those taking part in the discussion was that denervation of the renal pedicle in appropriate cases was a valuable asset to surgery. Animal experiment and human experience both showed that the kidney suffered in no way from being deprived of its nerve-supply. The functional complications to which some writers have drawn attention are evidently considered rare. Indeed we have heard of their being likened to the Russians who came through England at the beginning of the late war; everyone, it was suggested, had heard of them but very few had seen them.

NEW JOURNALS OF ANÆSTHETICS

WITHIN the last few weeks two new periodicals wholly devoted to anæsthetics have made their appearance on the continent, one in Italy and the other in France. Their production is evidence of the importance now attached in those countries to studies which until recent years were pursued in English-speaking countries almost exclusively. Germany has for some time had her *Schmerz Narkose-Anæsthesie*, but there, as elsewhere in Europe, local anæsthetics were so largely preferred to general that the study of anæsthesia as a whole, and the education of specialists, were behind what had been done in Great Britain, Australia, Canada, and the United States. The situation is now rapidly changing. Although it will probably be a good while before there are on the continent many practitioners devoting themselves entirely to anæsthetics, there are already a number who, though mainly surgeons or physicians, have undertaken research in connexion with, or have seriously practised that branch of medicine. The result has been in France the formation of a French "Society of anæsthesia and analgesia" whose official organ is one of the new journals referred to above. The first issue of *Anesthésie et Analgésie* contains a paper by the editor, Dr. R. Monod, on the aims of the society and the means by which it hopes to attain them, while Prof. E. Desmarest contributes a capital review of the present state of opinion and practice regarding anæsthetics. There is also a full account of the articles of the society and of its first session. Three original communications and a good recent bibliography complete an issue which sets a high standard.

RHEUMATISM UNDER REVIEW

INCREASING interest in the health of the industrial worker has meant increasing—though inadequate—attention to the rheumatic diseases which impair his efficiency. In the United States the American Association for the Study and Control of Rheumatic Diseases arranges conferences as a meeting-place for all medical men concerned in the study of arthritis, and the proceedings of its first annual congress, held at Cleveland last summer, have been reported at length.[1] In his presidential address Dr. Ernest E. Irons, of Chicago, rightly pointed out that the magnitude of the suffering and disability caused by arthritis offers a challenge to the medical profession and the public. Chronic arthritis is to be thought of as a disease that affects the body as a whole rather than the joints alone, and every patient presents a special problem. A division of arthritis into two clinical groups, atrophic and hypertrophic, is accepted as convenient, but the rôle of focal infection in their ætiology is variously assessed. Indeed, no clear opinion emerged from the congress as to whether the joint lesions are due to a bacteræmia, or are metastatic, toxic, or allergic. Dr. Arthur Steindler, in a careful study of 4339 patients, concluded that foci of infection were present in 17 per cent. of cases both of atrophic and hypertrophic varieties: these foci, in descending order of frequency, were in tonsils, teeth, accessory nasal sinuses, biliary system and genito-urinary tract. Removal of foci was followed by subsidence or decided improvement in a quarter to a third of the cases, but many relapsed, and when followed for a year only 8–15 per cent. of the patients were found to have gained real benefit. On the nature of the causative germs in these foci even greater divergence of opinions is found. It is commonly agreed that the streptococci are the predominant bacteria present, but very few workers accept a "Streptococcus rheumaticus" as probably responsible. The diversity of the members of the streptococcus group, their apparent ability to change in cultural characters, especially in their variable hæmolytic action upon blood corpuscles, makes experiment difficult. Further, there is lack of uniformity in the results of blood culture. A more suggestive finding is the presence of positive skin reactions to streptococci, and serum agglutinins for hæmolytic streptococci, in patients suffering from chronic atrophic arthritis. "I do feel," said Dr. C. W. Wainwright, "that the skin reaction is the most definite evidence of hypersensitiveness obtainable." When attempts are made to turn these results to practical use with injections of vaccines, it can only be said, however, that their value remains unproved.

A factor that has been emphasised more generally of late is the nutritional one. Rheumatic patients are often found to be taking a deficient diet; they favour sugars and sweets, refined cereals and white bread. Many workers accordingly ascribe the increasing incidence of rheumatic disease to a change not only in quantity but in quality of the foods usually taken, and emphasise especially an insufficiency of the vitamin B group.

[1] Jour. Amer. Med. Assoc., 1934, ciii., 1732, 1801, 1883.

Treatment, it was suggested, must take account of all these factors. The diet must be high in calories and rich in vitamins, with plenty of red meat, starches, fresh fruits and vegetables, and including yeast, wheat germ, and cod-liver oil. General measures of hygiene—rest, fresh air and sunlight—are important; and obviously infected foci should be removed. Sedatives may be needed to secure adequate sleep, and blood transfusion is often useful, especially before operations for removal of foci. The care of the joints themselves, it should be recognised, demands much more than a routine. The changes in them are due to the disease, to muscle spasm, and to inactivity in a position of deformity; hence rest and the avoidance of trauma, freedom from weight-bearing and some degree of immobilisation, with prevention of changes from disuse, are the indications, and they must be met by counterpoised motion and active exercises. It was pointed out that pain during exercise is of little or no significance provided it does not continue *after* exercise. Physical therapy, splints, specific exercise, and supports need thought and planning. Local heat and ionisation with choline derivatives are often helpful, while acetylsalicylic acid is a standby for pain. No mention was made in the debates of gold therapy as advocated by Forestier and others.

PNEUMOCOCCAL PERITONITIS

Candolin has lately made an elaborate study of 97 cases of pneumococcal peritonitis seen in Finland, and although his conclusions are not very novel the fact that they are reached from so large a series is in itself important. As has now been pointed out repeatedly, the disease is one especially of small girls. Candolin offers no explanation why this should be so: he is not at all impressed with the results obtained from examining vaginal smears; nor does he regard the vagina as a likely portal of entry for the pneumococcus. Of the cases in this series 64 per cent. were girls under ten years of age, and until the age of 30 females still showed a preponderance, after which there was a fairly even distribution between the sexes. Only a quarter of the patients were adults. The treatment given, in all but 11 cases, was operative, and as a rule the operation was done in the initial stage of diffuse, or non-localised, peritonitis. Such treatment is not what is usually accepted as the best, but the measures adopted are often determined rather by the difficulty of diagnosis than by the surgeon's preference for them. Weighing the pros and cons of early operation, Candolin thinks on the whole that delay in operating is rarely justifiable in adults, in whom the diagnosis must often be conjectural, to say the least. In children there may be more reason to suspect the disease, and the clinical picture may be definite enough to justify a differential diagnosis from appendicitis, which at this time of life is the only condition likely to cause confusion. In girls up to the age of ten pneumococcal peritonitis and appendicitis occur in the proportion of 1 : 3.

In pneumococcal peritonitis, Candolin finds, the onset tends to be suddener, and sometimes there is a history of previous catarrh. The patient's general condition is apt to seem worse than would be expected from the local signs in the abdomen. The white blood count is somewhere about 20,000, and a blood examination is helpful particularly in long-standing cases in which tuberculosis is suspected. Herpes and cyanosis, when present, are suggestive of pneumococcal peritonitis, and in about 70 per cent. of cases diarrhœa is a more or less conspicuous symptom. Unfortunately, however, in pelvic appendicitis too—and this is just the variety in which accurate diagnosis is liable to cause difficulty—diarrhœa is comparatively common. In pneumococcal peritonitis abdominal examination reveals a diffuse swelling, not at first obvious, which is doughy to feel and meteoric on percussion; usually there is no very definite resistance of the muscle wall, nor any localisation of signs and symptoms. Unfortunately, again, from the point of view of diagnosis, Candolin found that when one side was apparently more implicated than the other it was the right (30 per cent. of cases). A pronounced distension may be present from the start. Of complications those in the lung, and especially pneumonia, were fairly common, but Candolin seems to regard them as true complications, and not as part and parcel of a generalised pneumococcal septicæmia. Of his 97 cases 32 are noted as having some form of lung affection, 16 of these being pneumonia; and of the 16, there were only 4 with signs of pneumonia from the onset. Generalised septicæmia is reported in only 8 cases.

The mortality was rather higher in adults (16 out of 24, or 67 per cent.) than in children (40 out of 73, or 55 per cent.); of the 11 patients who had no operation, all but one died. Operation in the "diffuse" stage of the peritonitis showed a mortality of 62 per cent.; while of the cases left without operation at this stage (some eventually opened; some treated without operation) 46 per cent. died. In cases not treated by primary laparotomy and surviving this stage to develop an abscess which can be drained later the prognosis is of course comparatively good; thus those operated on in the stage of abscess-formation in Candolin's series had a mortality of 13 per cent. But, as he is at pains to emphasise, it is not fair to compare this figure directly (as has been done by some authors) with the figure for operation in the "diffuse" stage, since at the time of deciding whether or not to open the abdomen at the onset of illness one does not know whether the patient belongs to the group of possible survivors, or to the group who will die in the acute stage of the illness. As signs indicating a bad prognosis, he mentions a temperature above 40° C. (104° F.), a difference of more than 1·0° C. between the rectal and axillary temperatures, a pulse-rate above 130, albuminuria, absence of diarrhœa, intestinal paralysis, and the presence of a large number of bacteria in the exudate. Unilateral pneumonia did not seem to make the prognosis any worse.

[1] Candolin, Y.: Acta Chir. Scand., vol. lxxvi., 1935, Suppl. xxxiv.

Dr. W. G. Savage, who has been elected to succeed Dr. Veitch Clark in October as president of the Society of Medical Officers of Health, has been county medical officer for Somerset since 1909. His name has long been associated with a national campaign for pure water, pure milk, and unadulterated food.

An exhibition will be held at the Royal Society of Medicine, 1, Wimpole-street, London, on July 1st to 13th, of the works of members of the Medical Art Society, whose president is Sir Leonard Hill, and hon. secretary Prof. C. A. Pannett. Under the rules the works of art by members of the society, admissible to the exhibition, will be paintings, aquatints and mezzotints, drawings, etchings, and lithographs, statuary and plastic work in any medium, and carving. Illustrations of medical subjects will be included in the exhibition.

PROGNOSIS

A Series of Signed Articles contributed by invitation

LIV.—SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD

NEUROLOGICAL complications are present in at least 80 per cent. of all cases of pernicious anæmia (P.A.) when first examined. Occasionally the change is mental—varying in degree from irritability, altered temperament, and character, to the fully developed psychosis most commonly of the paranoid type; but the usual complication is subacute combined degeneration of the spinal cord (S.C.D.), heralded by *paræsthesiæ*—numbness, tingling, coldness—of the extremities and showing in the spinal cord evidence of diminished function of both the *posterior columns*—hypotonia with absent or diminished deep reflexes, impaired vibration, and positional sense in the limbs with resulting ataxia—and *lateral columns*—hypertonia with increased deep reflexes and extensor plantar responses. The physical signs vary, dependent on the relative intensity of involvement of the posterior and lateral columns.

Before 1926 S.C.D. was rightly regarded as an invariably progressive disease which proved fatal in two to three years. We are now able with efficient liver therapy not only to restore rapidly the blood picture in pernicious anæmia to normal, but also to maintain it with continued adequate treatment at a normal level. Has this advance enabled us to modify our outlook in the neurological complications of pernicious anæmia?

GENERAL CONSIDERATIONS

The symptoms and signs of S.C.D. may result from lesions in (1) the spinal cord, and/or (2) the peripheral nerves, which play a rôle probably greater then we have hitherto recognised. Disturbance of the functions of these structures in P.A. can result from (1) the anæmia itself, with resulting defective nutrition of nerve elements; (2) neuronic disintegration due to either a toxic agent or the absence of some specific factor necessary for neural nutrition; and (3) areas of softening which result from small hæmorrhages or thromboses. Any of these pathological disturbances in the peripheral nerves is potentially curable—i.e., given time and adequate therapy restoration of function will occur. But in the spinal cord any of these pathological factors may leave irreparable damage. No regeneration occurs in the central nervous system; hence only those symptoms resulting from temporary loss of function in the affected area of the cord due to the first and second factors detailed above are potentially curable. That this second factor exists is evident from those cases in which S.C.D. precedes the development of anæmia. The evidence available does not suggest that it is identical with the P.A. factors or with any of the known vitamins. On general grounds, therefore, the maximum therapeutic response which we can hope to achieve is to remove those symptoms resulting from peripheral nerve lesions and from temporary loss of cord function due to the factors above discussed.

But the clinical position is complicated by two facts: (1) the same physical signs result whether loss of nerve function is temporary or permanent; (2) it is difficult to differentiate clinically between certain posterior column and peripheral nerve defects of function, for paræsthesiæ, hypotonia, absent deep reflexes, and various sensory disturbances with ataxia are common to both. Hence in any given case of S.C.D. seen for the first time it would appear impossible to foretell with accuracy the results of treatment. Certain facts, however, do emerge from observations of patients suffering from P.A. and S.C.D. who are kept under continued adequate treatment (and no treatment which permits the red blood-cells to fall below 5,000,000 can be regarded as adequate):—

A. In over 50 per cent. of all cases treatment is followed by marked subjective improvement—the paræsthesiæ disappear, the gait becomes steadier, and the patient stronger; in only a small percentage of cases (under 5 per cent.) is there definite objective improvement, as evidenced by the restoration of a normal flexor plantar response which was previously extensor or diminution in the area of vibration loss. In this connexion it is important to avoid that optimism which results from inaccurate interpretation of altered physical signs, for the deep reflexes may revert to what appears to be a more normal type by extension of the cord lesion—e.g., the diminished knee-jerk of a patient in whom the degeneration is advancing in the lateral columns may become brisker.

B. If symptoms of S.C.D. are absent in an established case of pernicious anæmia they rarely develop if the patient is kept under adequate liver therapy—i.e., the prophylactic value of adequate anti-anæmic treatment against the development of S.C.D. is established. On the other hand, the development of S.C.D. is from clinical observation an almost inevitable consequence of inadequate treatment of P.A.

C. The presence of sepsis—urinary, pulmonary, or skin infections—not only retards the return of the blood picture to normal in P.A., it tends to accelerate the rate of progress of S.C.D.

RATIONALE OF TREATMENT

As in many other nervous diseases, so in S.C.D. the permanent loss of function resulting from the disease may be partially compensated by re-education—e.g., Fraenkel exercises or orthopædic measures; the temporarily impaired nutrition of muscle and nerve is improved by physiotherapy; but the essential treatment must clearly aim at overcoming the causative factors. From the general considerations above outlined, particularly the absence of more detailed knowledge of the second factor (and it cannot be held that the advocates of iron and vitamin-deficiency theories have established their claims), the only factor which lends itself to treatment is the associated *anæmia*; but that this is of overwhelming importance is shown by the infrequency with which symptoms of S.C.D. develop with a normal blood picture.

The detailed treatment of P.A. by various forms of liver and stomach extract, &c., has been the subject of many papers to which reference can be made. It may be summarised by emphasising that intramuscular injections of liver extract combine the maximum efficiency with the minimum expense in restoring the blood picture to normal. Any active preparation—e.g., Campolon (Bayer), Hepastab (Boots), Hepatex I.-M. (Evans)—can be used. As a rule 4–6 c.cm. are injected daily for four to seven days, and then on alternate days until the blood picture

is restored to normal. The maintenance dose—i.e., that which keeps the red blood-cells at over 5,000,000 per c.mm.—is then established; this varies with the individual, but averages 2–4 c.cm. every two to six weeks. Stomach preparations are preferable to liver extracts if oral therapy is desired.

CONCLUSIONS

1. When a patient with S.C.D. is first seen the combination of (*a*) profound anæmia with (*b*) marked subjective symptomatology is of favourable prognostic import. In these, treatment is likely rapidly to improve both the blood picture and the nervous symptoms. Young patients tend on the whole to respond better than old. Unfavourable signs are: (*a*) marked objective disturbance as evidenced by lateral column changes, with (*b*) a relatively slight anæmia; and (*c*) sepsis.

2. If the symptoms of S.C.D. improve pari passu with the blood picture in P.A. the prognosis is good, for, with the maintenance of a satisfactory blood picture, the development of nervous symptoms is in the vast majority of cases indefinitely retarded. It is well here to emphasise that the maximum improvement in the nerve symptoms may not occur for 9–12 months, although the blood picture is much more rapidly restored to normal, a fact easily appreciated when one remembers that peripheral nerve regeneration may be a necessary preliminary to recovery.

3. A patient with P.A. in whom S.C.D. has not developed is adequately protected against this complication by efficient treatment of the anæmia.

HENRY COHEN, M.D. Liverp., F.R.C.P. Lond.,
Professor of Medicine, University of Liverpool;
Hon. Physician, Royal Infirmary, Liverpool.

SPECIAL ARTICLES

THE STEWARDSHIP OF MENTAL HEALTH*

BY H. CRICHTON-MILLER, M.D., M.R.C.P.
HON. SENIOR PHYSICIAN, INSTITUTE OF MEDICAL PSYCHOLOGY

DISEASE of the mind is a conception nearly as old as thought and language. But the health of the mind has been taken for granted until recent years. Psychiatry is a much older word than the phrase "mental health." And this is significant. We begin to talk and write about a concept only when we find that we cannot assume its permanence. Centuries ago men talked of "ministering to a mind diseased:" to-day we ask "Who is responsible for keeping a mind in health?" To-day there seems to be an increased interest in bodily fitness with more stress on individual responsibility. Alongside of this tendency, public opinion is accepting the idea that the community has a responsibility for conditions favouring health; witness the clearance of slums and the provision of playing fields. If the maintenance of physical health were universally regarded as the basic wealth of the community, we might reach a clearer understanding of how far society and how far the individual are respectively responsible for it.

If this difficulty exists in matters of bodily welfare, it is greatly intensified in the more subtle and complicated problem of mental health. The familiar tag about "Mens sana in corpore sano" is charged with fallacious reassurance. Some may keep the body fit and yet become insane; while others maintain astonishing mental vigour despite gross neglect of physical health. The problem is indeed subtle and complicated, and it is so partly because we hold very varied views about mental health. Let us approach it first from the community point of view. We might describe a healthy community as one in which the mental hospitals were nearly empty; the mental defectives reduced to zero; crime enormously reduced; suicides very rare. That is frankly Utopian, but if succeeding generations keep steadily in view this fourfold objective, progress will at least be more rapid than it is at present. Indeed, as far as the first and the last criteria are concerned, we are, at the moment, actually losing ground.

Attempts at Definition

If I were asked to define mental health I would confess myself defeated, but I am prepared to describe what the term conveys to me. I would describe the healthy minded man as one who combines personal harmony with social effectiveness in the following ways:—

1. He must have the will to live.

2. He must be able to enjoy all normal biological functioning.

3. He must have enough feeling of self-mastery to maintain adequate independence of circumstance and environment.

4. He must be ready to face conflict, internal or external, with a minimal recourse to evasion; or, in other words, he must be able to maintain subjective harmony with the least possible objective distraction.

5. He must have a scale of values whereby experiences and memories that have purpose and significance are preferred to those that lack them.

6. His social effectiveness must be characterised:—
   (*a*) By a reasonable confidence in his fellow-men.
   (*b*) By a broad toleration of human idiosyncrasies.
   (*c*) By that sense of social responsibility which only manifests itself in those who recognise in social contribution a prerogative rather than a duty.

It is clear that there can be no mental health where there is no will to live. The ability to enjoy normal biological functioning is also an obvious criterion of mental welfare; it matters not whether we are considering the girl with anorexia hysterica or the homosexual man. No one is mentally fit who lacks a reasonable degree of self-mastery. The young man who cannot face the simplest social gathering, and the woman who cannot bring herself to travel by underground, are cases in point. I have said that the healthy minded man must face conflict with a minimal recourse to evasion. This involves all tedium, frustration, insecurity, and vicissitude from which men try to escape by active distraction or passive anæsthesia. It comprises the youth who gambles because he is bored, the woman who drinks to forget her sexual conflict, the girl who develops asthma when she is jilted, and the man who takes to morphia when the share market goes against him.

Furthermore, to be healthy minded, one must have enough religion or philosophy to provide a scale of

*Being extracts from an address delivered at the annual general meeting of the Scottish Association for Mental Welfare at Glasgow on May 17th, 1935.

values in the unlimited alternatives of life. Man can only find permanent contentment by living on a plane that is in some degree higher than that of the instinct-driven animal. Unless his choice is inspired by some purpose other than immediate gratification, he must ultimately sink to the level of the creature whose well-being is entirely conditioned by his environment. It would be vain to suppose that this is not a very usual destiny. Every doctor of experience would agree that an appreciable proportion of his most disheartening cases are people who have no object in life, whose experiences are sterile, whose memories have no significance, whose condition can only be improved by a transitory stimulus from without. Some, no doubt, suffer from a degree of mental defect, but many have sufficient intelligence if they would but apprehend the transforming effect on life of a purpose that emanates from permanent values.

In his social adjustment the healthy minded man must feel a reasonable degree of confidence in his fellow-men. For every fully developed case of paranoia in our mental hospitals, there must be hundreds, if not thousands, who suffer from minor degrees of suspicion and mistrust; whose lives are blighted by this barrier to human harmony; and who poison the springs of social life for the community. Mental health also demands toleration. If we recall the familiar inferiority complex it is clear that many cases are partly, if not entirely, attributable to impatience and disparagement manifested chiefly by the adult towards the child. Above all, no one can be regarded as healthy minded who fails to accept his herd-status as one of reciprocal obligation. This adjustment of the individual to society has further implications. It should be an active participation in herd life. Neither a passive nor a compulsory participation fulfils the requirements. I would suggest that compassion, construction, or creation must enter into the relationship. The first is no doubt a derivative of the maternal instinct; the second sublimates masculine aggressiveness; the third is the expression of femininity.

The Question of Responsibility

If mental health is as complex as I suggest, how are we to attribute responsibility for its promotion and maintenance. Clearly we must begin with genetics. No community can raise its level of health, physical or mental, unless it breeds for health. This is axiomatic. Apart from sterilisation, which I am prepared to believe is of little ultimate importance, there is the much broader problem of certificates of fitness for marriage. This at once throws into relief the deplorable inadequacy of our knowledge; and when we realise how uncertain would be the voice of society in this matter, we must exercise tolerance towards the individuals who appear to us to procreate when they should refrain. Furthermore, it is to be remembered that the whole subject of transmissibility is pervaded with camouflage. Our genetic scientists are groping in a sphere where everyone has a vested interest to camouflage facts. The eugenic ideal is, on the surface, easy to promote, with all but the least educable of the community. But it is far from easy to secure that readiness to face reality, without which the data of genetics are subject to perpetual distortion. Therefore the responsibility for the dysgenic factor in the mental health of any community must be borne by the community at large, as well as by its scientific and professional advisers. The only exception is constituted by those individuals who are clearly ineducable in the matter of social responsibility, and for these society should accept the duty of rendering procreation impossible.

After genetics, we may consider the biogenic disturbances. This is a very wide group. It includes the exogenous poisons of which alcohol is still the chief representative. It comprises all the focal and systemic poisons from quinsy to syphilis. It covers all forms of organic deterioration, and most important of all, disequilibrium of the endocrine system, such as hypothyroidism.

The third and last group of mental disorders is the psychogenic. In many ways this is the most important. It must be borne in mind that these three groups can, and frequently do, overlap. Thus you may have a young man who is the victim of inherited defect, who suffers from a chronic sinusitis, and who develops well-marked neurasthenic symptoms on account of an unsympathetic foreman. The psychogenic disturbances of mental health are, in evolutionary precedence, the most recent. The genetic factor was clearly the earliest, being one that we share with animals. The biogenic we share with primitive man, but the psychogenic is the doubtful glory of civilised man. Civilisation implies an ever-increasing range of choice. Where primitive man has few alternatives and invariably makes his choice on grounds of immediate satisfaction, civilised man is incessantly faced with alternatives. He is called upon to exercise fine discrimination. If he is merely an instinct-driven animal he will sooner or later succumb to uncertainty. If, on the other hand, he is possessed of clear-cut values, he will discriminate with relative ease and maintain a consistent purpose in life. Man has to make his choice in the wide field of conceptual ideation that he derives from his cortical development, and in the equally wide field of material possibilities which he owes to his conquest of nature. Thus all extension of knowledge and all expansion of material development increase the pressure on his capacity of discrimination. In this development, civilisation presents two outstanding difficulties, machinery and monogamy. To each of these there has been, in recent years, one big-scale resistance.

Mechanisation and Monogamy

In so far as Mahatma Ghandi can be said to represent Swaraj, Indian nationalism has pitted itself against the mechanisation that characterises western civilisation. It is easy enough to recognise, if not to sympathise with, the object. Ghandi sees in western mechanisation a process that saps the citizen of individuality; that robs him of constructive or creative achievement; that renders him dependent on the machine and its owners; that concentrates on a few individuals the responsibility for intelligent thought and action. Ghandi sees the doubtful benefits to western man of a mechanised civilisation. His argument is that oriental man will be overcome by mechanisation once he accepts and admits it. So Ghandi very consistently does his bit of weaving every day. Sometimes he consistently travels on foot; at other times he inconsistently goes by train. Very inconsistently he reads and writes by means of lenses in a celluloid frame that Indian culture could never provide. Most inconsistently but most wisely he elected that his appendicitis should be treated by western surgery and western asepsis, rather than by the methods of the East. And the moral of this is that however injurious mechanisation may be to the mental health of man, it is a factor in reality to which man must adjust. That he has so far failed to adjust to it is probably admitted by all of us.

A strangely contrasted picture is presented to us by Soviet Russia. Its rulers are imposing mechanisation on a simple people with such enterprise and determination as command the wonder of the world. At the same time and by the same uncompromising methods, they have reduced monogamy to little more than a farce. By so doing they claim to have greatly limited the incidence of neuroses, and this claim it is not difficult to accept. But monogamy, more than all social phenomena, is to be judged, not by its influence on the mental health of the present generation, but by its effect on the character development of the next generation. It is open to us to anticipate that in another ten years, Russia may be faced with the problem of the antisocial or neurotic adult who was an unwanted or unprotected

child; and that problem is likely to present itself on a scale that outweighs the advantages of the present alleged reduction in adult neuroses.

In each of these two great problems—mechanisation and monogamy—there enters largely the factor of security. The industrial worker may have better conditions of living than the peasant of 200 years ago. On the other hand he is less his own master, he has less opportunity for individual achievement, and he is more dependent on circumstances outside his control. Similarly, the stability of the monogamic family provides not only for the children, but also for the mother, a factor of security which should ultimately make for mental health, despite all the familiar criticisms to which the system is incessantly subjected. Nevertheless monogamy, which is the product of centuries of social evolution, is a factor in civilisation which can be well-nigh destroyed at a blow, or, on the other hand, it can be reinforced by social pressure as is at present happening in Italy. Mechanisation is less of an institution and more of a process, and Ghandi will find it harder to exclude than the Soviet Government has found it easy to promote.

The Press

Perhaps the agent in modern civilisation, which has the most obvious influence on mental health, is the press. It is difficult to exaggerate the power of a highly organised press in promoting changes in public opinion and in disseminating ideas if not information. Probably the press in this country is as commendable as in any other, if not more so. But even so, there are features that demand criticism. Most newspapers live by reason of their advertisements. Advertisements are, in general, means of exploiting the suggestibility of the reader. A paper or periodical which appeals to a discriminating and informed public is a poor medium for most advertisements. Hence the paper that can reach the suggestible millions commands the largest revenue. To reach them the paper must not be too informative and must have sensational news, sensationally served up. All true education is directed towards eliminating suggestibility; all second-rate journalism exploits it. It would hardly be an exaggeration to say that much good ratepayers' money is expended in vain because of the disintegrating influence of the more sensational and unscrupulous of our newspapers. As an example, one might quote the persistent exposition of suicide, with details often of the most trivial kind. I think it was Dr. Inge who said that the vulgarity of the present age manifested itself in mistaking the unusual for the important. Judged by this criterion, not a few newspapers would stand condemned. I submit that if the press had any serious interest in the mental health of the nation, it would find ways of informing its readers without pandering to their love of the morbid, and of eliminating such publicity as exploits the suggestibility of the public. A highly suggestible community cannot be regarded as healthy minded. It shows, in fact, that mentality which is prized by dictators and which incidentally is a precondition of aggressive war.

School-masters

If the responsibility of the press is great, that of school-teachers is at least of equal importance. The teaching profession is so highly organised that individual teachers rarely have a free hand in what they teach, and sometimes labour under restrictions as to how they teach. They are generally obliged to prepare a group of children whom they have not selected, for some form of examination or test of which, in many cases, they disapprove. The charges of cramming and over-working are rarely deserved by teachers. They should be levelled against the system or at the responsible chiefs who direct the whole organisation. Undoubtedly harm, and frequently permanent harm, is done to a child who is over-worked at school. But two things may be said in mitigation of the teacher's responsibility. The first is that the over-worked child generally comes from a home with a strongly competitive atmosphere. The child really suffers from fear of parental disapproval rather than from direct over-work. Therefore it is parents rather than teachers who need to be transformed. Again, young people, and especially older adolescents, not infrequently over-work from an unconscious motive of escape. Generally speaking they suffer from some acute emotional conflict, and they find in pure intellectual activity a release from painful feeling. Such pupils frequently give great satisfaction to myopic teachers who fail to recognise the fundamental pathology of this phenomenon of precocious zeal.

It is sometimes supposed that great injury is done to the emotional development of pupils by corporal punishment. It is even claimed that no sort of punishment should be required in a well-conducted school. I do not propose to enter into this important controversy at present, but let me say this. Many, if not all, of the protests about school punishment and the harm it does come from prejudiced sources. On the one hand we have the sentimental humanitarians, who are impelled by their own unresolved masochism to champion the cause of all physical sufferers without any sense of proportion. On the other hand, there are the Freudians, who are obliged to make all punishment conform to the pattern of the sadistic school-master. This obligation results from their creed which allows no divergence from a rigid causality. Furthermore, I should like to point out that as far as my professional experience goes, much more harm is done by mental cruelty than by physical punishment. The adult who describes to you the anguish of his school life is more likely to tell you of a sneering mistress or a sarcastic master, than of the taws and the cane. Boys are more sensitive to ridicule and less sensitive to physical pain than is generally supposed. Finally, I should like to testify that as far as my observations go, I believe there is no section of the community that has shown a keener interest in modern views of mental hygiene than the teaching profession.

The Clergy

The clergy must obviously accept a certain responsibility for the mental health of the community. It is very easy to criticise so vulnerable a profession. Nevertheless, I would make two observations. The first is that the whole spirit of modern psychology is in favour of facing facts. We recognise more and more how precarious is any psychological adjustment that comprises an attitude of evading reality. I suggest that partly from the compulsion of credal traditionalism and partly from the desire to proffer reassurance, ministers of religion tend to elaborate specious evasions for their followers. Psychotherapists of every school are constantly confronted by the obstacle of a religious exhortation to turn away from the essential conflict and to seek peace in a phantasy solution that is regressive rather than progressive. The result is that psychotherapy encounters a good deal of indiscriminate obstruction from organised religion. This obstruction may sometimes be justified, but in general it takes the form of a protest against selfish introspection, while in origin it emanates from the fear that sectarian loyalties may be undermined. This leads to my second observation. I have come to the conclusion that many religious teachers fail to recognise that every emotional relationship is liable to comprise two components—an inhibiting loyalty, and an inspiring ideal. This is true whether the object of the emotional relationship be concrete, for example a parent, or abstract, as in the case of patriotism. The mental health of any community stands to gain from all inspiring idealism. On the other hand, inhibiting loyalties can only serve the young and those of limited intelligence. I daresay that in this country the clergy fail in this respect less than in any other country, but nowhere, I

fancy, is this aspect of responsibility adequately recognised.

My last word about the teachers of religion is this. In Christian countries it was customary to look to religious organisations to teach character. By character I assume that we mean valuation and purpose in life. More and more public opinion is looking in other directions for this most essential contribution to mental welfare. Surely the churches must accept some responsibility for a change that most of us deplore.

Doctors

And now let me turn to my own profession. Its responsibility for the maintenance of mental health in the community is trifling compared with that of the teachers and the clergy. But on the other hand it has an indefeasible obligation to care for the mentally sick. That it fulfils this obligation creditably cannot be claimed by anyone who knows and who faces the facts. It is some dozen years since Sir Farquhar Buzzard urged that we should cease to describe functional disability as nervous, and call it frankly a minor mental malady. But the medical profession still clings to the misleading distinction so dear to the lay mind, which separates as by some great gulf, "nerves" from "mental trouble." May I suggest that the first and perhaps not the least contribution that my profession should make to the cause of mental health is to stand out against the perpetuation of a popular misconception, and to regard every departure from mental health as a mental malady, however trivial or however curable.

I have suggested that the individual responsibility of teachers is much reduced by the restrictions of the organised system in which they work. In an even greater measure the responsibility of the doctor is reduced by the very important fact that he has been taught nothing whatsoever about minor mental maladies. The doctor of this generation has been trained in a school dominated by organic concepts of causality. He has seen his clinical teachers brush aside endless cases of hysteria, anxiety, and compulsion as little better than malingerers. He has studied mental disorders in institutions to which admission could only be gained on proof of gross mental disturbance. Who then can blame him if, under the conditions of panel practice, he adjusts to his ignorance by a diagnosis of "debility," by a prescription for bromide, and by vague reassurance? On the other hand, the community has the right to demand that the state of affairs which exists to-day should no longer continue. Individual practitioners may be excused, but those who are responsible for the teaching of medicine should be forced to realise that adequate training must be provided for the student of to-day. As it appears to me, the contribution of the doctor to the mental welfare of the community is more therapeutic than prophylactic; as he is at present trained, he is generally incapable of recognising, let alone curing, minor mental maladies. For this incapacity his teachers are, or were, responsible. One of the most hopeful signs is the active lead given by the regius professors of medicine at Oxford and Cambridge.

The ultimate stewardship of mental health lies with the individual himself. The functions of clergyman and journalist, of teacher and doctor, all converge in bringing home to the individual this ineluctable trusteeship. It is the citizens who must bind themselves that the city may be free. We look not only for a significant reduction in mental disease, but for a transformation in the personal harmony, the social effectiveness, the coöperative responsibility of the ordinary individual. "Neither walls, theatres, temples, nor senseless equipage make states, but men who are able to rely on themselves."

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH HOSPITAL EXTENSIONS

LAST week the Duke of Kent laid the foundation-stone of the Simpson memorial maternity wing of Edinburgh Royal Infirmary. The cost of the building is to be £438,000, of which £300,000 has already been subscribed. After the completion of this extension the annual cost of running the infirmary will be £182,000, an increase of £20,000 compared with the present figure. The new wing will contain 122 beds, and when the scheme is completed the total number of patients under the infirmary roof will be 1210. A new nurses' home is also to be built, which will accommodate 300.

His Royal Highness also unveiled, at the Church of Scotland Deaconess Hospital, a memorial stone to the late Lord Sands, in commemoration of his noteworthy service to the institution. This hospital was founded 41 years ago by the Church of Scotland, and is the only institution of the kind which has been founded and carried on by any Protestant church in this country since the Reformation. A large extension of the hospital is now being carried out which will include the building of a new nurses' home.

DEVELOPMENTS IN GLASGOW

A chair of ophthalmology for Glasgow University was endowed in 1914 under the will of Dr. Gavin Tennent. The foundation included an ophthalmological wing in connexion with the Western Infirmary. This has now been completed, and Dr. Arthur J. Ballantyne has been appointed the first professor of ophthalmology in the university.

The health committee of Glasgow corporation are anxious to seek a closer association with the university authorities, in order to stimulate medical research and teaching in the public health department and in municipal hospitals. They are also anxious to encourage research in the municipal hospitals, particularly from the point of view of serious diseases such as cancer and tuberculosis. Among proposals made is that accommodation should be provided enabling students to reside in the hospitals for short periods.

SPECIAL SCHOOLS FOR DEFECTIVES

At the annual conference of the Scottish Association for Mental Welfare, lately held in Glasgow, Dr. Ivy McKenzie said she thought the provision of special classes for mental defectives had not proved a success. No amount of instruction of any kind could enable the defective or the feeble-minded class to compete in the labour market. He considered that the cost of education in special schools is disproportionately high. The classes are small, the teachers are among the best, and yet only an insignificant proportion of the pupils reach a standard of development at which they can provide for themselves. Dr. Mackenzie said that there was a curious idea that a child who was defective in capacity for abstract learning may be competent in handicraft. During the past twenty years there had passed through his hands dozens of lads who had been in classes for manual instruction, and he could only describe the results of their education in that respect as pathetic. He did not think defectives should be allowed to marry, and suggested that rural life offered a new hope for them. The defective whose wants were in proportion to his gifts, would be happy with his bed, his food, and a field.

Dr. H. Crichton-Miller in his address on the Stewardship of Mental Health said that the responsibility of doctors for mental health was small compared with that of teachers and clergy. Nevertheless they were expected to minister to the mind diseased, and no one who faced facts could feel that they had fulfilled this obligation creditably. [Full extracts from Dr. Crichton-Miller's address appear on page 1292.]

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL ATTENDANCE ON THE CIVIC GUARD

FOR some time past there has been considerable discontent in the profession as to the conditions on which medical attendance is provided for the members of the Civic Guard, the police force of the Irish Free State. For some six or seven years after the force was organised medical attendants were appointed by the Chief Commissioners on similar conditions to those which existed in the time of the previous force —the Royal Irish Constabulary. In the ordinary course the post was offered to the dispensary doctor of the district in which a country station was situated, and the remuneration was on a capitation basis at the rate of two shillings per man per month. Some five or six years ago this system was changed. All medical men in the neighbourhood of the station where a vacancy for a medical attendant occurs are invited to apply for the post, stating their terms per visit. It is commonly believed that the applicant who is contented with the lowest fees is appointed, but this is denied by the authorities of the Guard, who state that other considerations are also weighed, such as proximity of residence and the wishes of the local members of the force. It is claimed that a considerable saving has been effected by the change of methods of appointment and of remuneration. On the other hand it is pointed out that this economy has been effected at the expense of health of the men of the force. When the medical attendant was paid on a capitation basis it was both his duty and his interest to exercise a general supervision over the station as regarded its sanitary condition and to pay attention to any matter which might injuriously affect the health of the men. At present he has no duty except to attend and give treatment to a sick man and he has no preventive or supervising duties. The claim that proximity of residence is given consideration by the authorities in making an appointment is not likely to be accepted, for in many cases medical men living ten, fifteen, or more miles away have been selected, to the exclusion of those living close to the station and in active practice in its immediate neighbourhood. In another respect also the medical care given to the Civic Guard has been criticised. The authorities give "general practitioner" treatment and nothing more except to a guard who is injured in the course of his duty. If a guard requires hospital treatment or special treatment of any kind he has to provide it at his own expense, or receive it as a charity patient in a hospital. It is true that the Government has made a substantial contribution to form the nucleus of a medical aid fund, but it repudiates any further responsibility. It would appear that it would be to the interest of the health of the men of the force if the Government were to take full responsibility for the care of their health as it does for that of men serving in the Army. The Civic Guard, like the Army, is a national force for the whole country under the control of the Government.

MEDICINE AND THE LAW

Claims against Deceased Practitioners

IT is often hard enough for a medical practitioner in his lifetime to repel a claim for damages founded on allegations of negligence in some instances scarcely remembered in the course of a busy practice. It will be harder still for his estate to repel such claims after his death when the chief witness for the defence cannot be called. The two principal medical defence societies, as their members are or will presently be informed, are taking steps to enlarge the scope of their protective activity so as to give the benefit of their help and advice to the executors and administrators of deceased members. The recent change in the law has been mentioned from time to time in these columns. Until last year there was a curious maxim, peculiar to the English common law and unknown in Scotland, to the effect that a personal action dies with the person. The maxim was mitigated by several complicated exceptions inserted by Parliament or by the law courts. Thus the Fatal Accidents Act of 1846 (better known as Lord Campbell's Act) enabled certain specified relations of a deceased person to claim certain limited kinds of damages against anyone whose negligence had caused the death. But it remained substantially true that the victims of a defendant's negligence might lose their remedy if the defendant died; their personal action would die with him. Last year the Law Reform (Miscellaneous Provisions) Act made an important change. Henceforth, when anyone dies, the causes of action subsisting against him or vested in him are to survive against his estate or for the benefit of his estate as the case may be. In other words it is now the law that an action for negligence against a surgeon or physician will not come to an end if the defendant dies. The executors of the surgeon or physician will have to fight the action at every conceivable disadvantage, since the man who best knew what had happened on the occasion of the alleged negligence will not be there to explain. Curiously enough, Parliament admitted that in certain cases this absence of the principal witness for the defence would work intolerable hardship. The Act is expressly excluded in claims for defamation and seduction, and in certain other circumstances, where the defendant is dead. Yet in allegations of professional negligence the death of the defendant is to leave the plaintiff free to launch or continue claims which only the defendant's evidence could properly rebut. Almost the only concession which will assist a dead defendant's executors is the statutory condition that either such claims must have been pending at the date of the defendant's death or else the cause of action must have arisen within six months before the defendant's death and proceedings must have been initiated within six months of the date on which his personal representatives assumed their duties.

There has scarcely been time as yet to judge how the Act will work. Already the courts have had to examine some of the problems it creates. But enough has probably been now said to convince all practitioners that the consequences of the change are an added argument for membership of one of the professional defence societies. The practitioner can hardly hope to escape the threat of litigation in his lifetime. It is to be feared that the new Act will encourage speculative claims against his estate after his death. These are best met with the expert help

of societies which give special study to such contingencies.

Injuries to Inmate of Public Assistance Institution

On May 19th the North Somerset coroner investigated the death of a patient at the Wells Mental Institution, following injuries (which included 13 broken ribs) apparently incurred at the Frome Institution during attempts to restrain him. The deceased, a rag-sorter named Rowlands, was said to have shown signs of mental instability on May 8th and was sent to Wincanton Institution. It was stated at the inquest that, as there were only female nurses at that institution, he was removed from the Wincanton to the Frome Institution on May 12th. According to the night attendant at the latter place, Rowlands was restless, violent, and noisy all night, and had frequently to be put back into bed. The witness was assisted by two patients named Turner and Grise. He denied that he or Turner knelt on Rowlands or that a door was banged on him or that any impatience or temper was shown. The master of the Frome Institution had not been informed that Rowlands required restraint. Rowlands was sent next day to Wells, where he died. The certificate on which he was admitted at Wells said he was noisy and uncontrollable and required three men to keep him in bed. He was found to be bruised on the legs, arms, and chest, and an autopsy showed seven ribs broken on the right side and six broken on the left. The medical superintendent at the Wells Institution said that considerable violence must have been applied and that the ribs might have been broken by a knee being placed on his chest. It was stated that neither Turner nor Grise was capable of giving evidence. The jury returned an open verdict attributing death to hæmorrhage due to injuries received during the night at Frome.

Under the Public Assistance Order the master of an institution is obliged to notify the coroner within 48 hours of the death of a lunatic or alleged lunatic and he must also furnish a copy of a certificate by the medical officer stating, amongst other details, the apparent cause of death and any unusual circumstances attending the death, with a description of all injuries known at death or subsequently discovered. Thus, had the death occurred at Frome, there would presumably not have been wanting that measure of adequate investigation which public opinion demands. Under Section 160 of the Poor Law Act the Minister of Health has a general power to hold such inquiries as he may consider necessary or desirable. As regards inquests, coroners are vigilant to investigate any death occurring in a public institution where patients are treated among strangers in the absence of their friends and relations. It by no means follows that severe injuries to a patient are due to brutal and mistaken methods on the part of the staff or of his fellow-inmates; but it is obviously essential that cases of this kind should be thoroughly sifted by some independent authority.

WEST END HOSPITAL FOR NERVOUS DISEASES.—The accounts of this hospital show a balance of £1302. The X ray equipment, which had been condemned, has been renewed and as a generous gift towards this was received from the Bernhard Baron trustees the department has been named the Bernhard Baron X ray department. The in-patient hospital in Regent's Park received 582 patients, and 37,329 attendances were made by out-patients in Welbeck-street.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lt. (D.). W. G. Finnie to *St. Angelo* for R.N. Hospital, Malta.

ROYAL NAVAL RESERVE

Proby. Surg. Sub-Lt. P. S. Luffman promoted to proby. Surg. Lt.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt.-Comdr. (D.). D. MacGregor to *Drake* for R.N.B.

ARMY MEDICAL SERVICES

Colonel W. P. MacArthur, D.S.O., director-general of Army Medical Services at the War Office, has been selected for appointment as commandant of the Royal Army Medical College, and promotion to major-general, from Sept. 26th next, in succession to Major-General R. B. Ainsworth, D.S.O., who retires on that date.

Colonel J. W. L. Scott, D.S.O., will then succeed Colonel MacArthur as deputy director-general, and will in turn be succeeded as assistant director-general by Brevet Colonel F. Casement, D.S.O., assistant director of pathology and hygiene in the Western Command.

ROYAL ARMY MEDICAL CORPS

The undermentioned Lts. (on prob.) are secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931: M. Kosloff, J. McN. Lockie, A. Gleave, J. L. Gordon, G. G. Robertson, A. M. Pugh, J. H. Taylor, D. Wright, and D. N. Keys.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt. J. N. Heales to be Capt.

TERRITORIAL ARMY

Maj. E. Scott, D.S.O., to be Lt.-Col.

Lt. L. J. Beynon, from 19th Lond. R., to be Capt.

A. T. Halton and I. R. Jones to be Lts.

Supernumerary for service with the O.T.C.—Lts. T. H. Wilson, A. C. Frazer, and C. L. Heanley to be Capts.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. G. M. Goodwille, from Active List, to be Capt.

ROYAL AIR FORCE

Group Capt. A. Grant to Headquarters, R.A.F., India, for duty as Principal Medical Officer, vice Wing Comdr. R. W. Ryan.

Wing Comdrs. W. G. L. Wambeek to Station Headquarters, Heliopolis, Egypt, for duty as Medical Officer; T. Montgomery, to Headquarters, Western Area, Andover, for duty as Principal Medical Officer, vice Wing Comdr. A. J. Brown, D.S.O.; P. T. Rutherford, O.B.E., to No. 6 Flying Training School, Netheravon, for duty as Medical Officer.

Wing Comdr. T. S. Rippon is placed on the retired list.

Wing Comdr. T. S. Rippon, whose retirement from the R.A.F. is now gazetted, took a considerable part in research work on the mental aptitude for aviation and the essential characteristics of successful and unsuccessful aviators. This was referred to in THE LANCET of September, 1918, and largely influenced the official methods of selection for Commissions. He qualified in 1911 and was educated at Bristol and the London Hospital, and had just established practice in Canada when the war broke out. He saw considerable service abroad and has been president of the Central Medical Board, R.A.F.

Flight Lt. J. Magner to Marine Aircraft Experimental Establishment, Felixstowe.

Flying Officers posted to Medical Training Depôt, Halton, on May 7th, on appointment to Short Service Commissions: P. A. Cooper, L. E. A. Dearberg, R. C. H. Tripp, H. L. Willcox, A. R. C. Young; J. C. Blair to Station Headquarters, Amman.

Flying Offrs. promoted to rank of Flight Lt.: D. R. Crabb, V. D'Arcy Blackburn, H. Bannerman, and H. S. Barber.

RESERVE OF AIR FORCE OFFICERS

Flight Lt. R. J. I. Bell relinquishes his commission on completion of service.

INDIAN MEDICAL SERVICE

The appt. of Lt. (now Capt.) T. K. White is confirmed.

Lt.-Col. R. H. Lee retires.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

THE 141st session of the Council was opened on May 28th, when Sir NORMAN WALKER, the president, read to the Council a loyal address to the King on the completion of his Silver Jubilee. In offering cordial and respectful congratulations upon the occasion to His Majesty the address ran :—

Throughout the twenty-five years which your loyal subjects now commemorate with thanksgiving, the profession of medicine has enjoyed the special countenance and encouragement of Your Majesty, with the gracious support of Her Majesty the Queen and other members of the royal family. We beg most humbly to be permitted to record our dutiful sense of obligation and indebtedness for the royal patronage thus bestowed, and our hope and belief that it has proved a source of profound benefit to the science and art of medicine as well as to the whole people themselves, not only throughout the Empire but among men of goodwill in every land. We gladly and proudly recognise that Your Majesty's reign has been signalised by remarkable advances in the healing art, which have brought relief to the suffering and the promotion of better conditions of life among all classes of the community. New discovery since 1910 has provided medicine and surgery with new means of healing for diabetes, for certain widespread forms of anæmia and malnutrition, for crippled and defective children, for the wounded soldier and the injured workman, and for the mending of the maimed and the prevention and defeat of disease. Advance has also taken place in the science of physiology, which gives good hope for the better and fuller life of the normal man. In a single generation the "expectation of life" for all men has been extended some seven or eight years. Above all, Your Majesty's reign has been made famous by the enormous extension of facilities for bringing the blessing of health and recovery from sickness to millions of your subjects who formerly lacked such assistance in their time of need: this great fact is demonstrated beyond doubt by the medical service made available during the war, by the progress of the child welfare and school medical services, by the health insurance of sixteen million persons, by the reform of the poor-law medical service, and by the enormous expansion of the voluntary and municipal hospitals. In all these popular and practical changes we recognise not only the will of Parliament but the sympathetic and upholding hand of the King.

The address, signed by the President, by Sir George Newman, and Mr. Herbert Eason as respectively senior and junior treasurers, and Mr. Michael Heseltine, the registrar, concluded by expressing thanksgiving for His Majesty's continued health and reign and an earnest desire that there might be granted to him and to the Queen "many more happy, peaceful years with ever-widening opportunities for the display of their beneficent influence and encouragement at home and abroad."

Sir Norman Walker then referred to the deaths which had occurred since the last session of two members, Prof. Arthur Thomson and Sir Leslie Mackenzie. He recalled the active part taken by Prof. Thomson in everything concerned with medical education and to the firm views which he held as to the importance in the educational scheme of a thorough knowledge of anatomy. Of Sir Leslie Mackenzie he said: "Education interested him in every connexion, and before he began his medical studies he had won as a graduate in arts the Ferguson scholarship in philosophy, the blue ribbon of the four Scottish universities." Philosophy ran through all his subsequent work and made him a valuable member both of the Education and Executive Committees of the Council. The president welcomed as his successor as Crown nominee for Scotland, Dr. John Ritchie, M.O.H. for Dumfries, and he reminded the Council that Dr. William Bruce, the first direct representative for Scotland, was medical officer of health for the County of Ross.

Sir Norman Walker went on to congratulate Sir Holburt Waring who was for nearly 12 years a treasurer of the Council upon receiving a baronetcy, and Sir Walter Langdon-Brown, representative of the University of Cambridge, upon his knighthood. He further extended congratulations to Prof. Stopford, the representative on the council of the Victoria University of Manchester, and also the university, on the appointment of Prof. Stopford as vice-chancellor.

The president continued: The Executive Committee at their meeting in February decided that it was right that your president should offer to give evidence before the Select Committee of the House of Lords to whom the Bill for the Registration and Regulation of Osteopaths stood referred. I took the opportunity to expound the merits of our British system of one Register for qualified medical practitioners, and am hopeful that the system which has worked, and worked well, for nearly 80 years will be maintained.

You have in your hands the report of the Curriculum Committee appointed last June. Sir Richard Quain said in his presidential address on Nov. 22nd, 1892: "It is now recognised, and it is my hope that it will be more and more recognised every year, that the Council is doing all in its power to secure the higher education of the profession and to elevate and maintain its character in all that is essential in connexion with the welfare of the public, within the lines marked down for us by Parliament. . . In some other countries these duties devolve on Government officials: happily here they are placed in our own hands, and I am confident that we shall not fail to prove worthy of the trust thus reposed in us." The Curriculum Committee have worked very diligently, and the report has been considered and reconsidered again and again. In its present form it represents the combined wisdom of its members. It is not for me to go into any details; these will be dealt with by the chairman, Dr. Tidy, but it is proper that I should indicate from the chair what seems the best method of dealing with the report.

Another of my predecessors has said that "education is the primary occupation of the Council, and time must be provided for its consideration." It is always difficult to construct a time-table for the Council's sessions, but we have provisionally earmarked Thursday or Friday forenoon for the purpose. It is suggested that the discussion should follow the lines of a second reading debate on a motion that the report be received by the Council and circulated to the licensing bodies with a request for their comments and criticisms. Coöperation between the General Council of Medical Education and Registration of the United Kingdom and the licensing bodies is the root principle of the British method of medical education, and it will be advantageous if communications can be received from the bodies in time to be dealt with at the November session.

The Medical Register had added to it in 1934 1664 names, a number exceeded, sometimes considerably, in the years 1921 to 1927 inclusive. There were 898 deaths, and the number removed from the Register for other reasons, the great majority under the provisions of Section 14 of the 1858 Act, was

61; the 1935 Register, which includes the Colonial and Foreign lists, therefore contains 57,496 names. The figures showing the number of students registered by the Council in 1934 are: in England 1094, a decrease of 37 as compared with the number in 1933; in Scotland 724, an increase of 25; in Ireland 532, an increase of 75. The total 2350, which thus shows an increase of 63 over the total for the previous year, has only twice been exceeded, in the years 1919 and 1920, when the totals were 3420 and 2531. I recall our past experience that when trade is bad, entries of medical students go up, and vice versa. There are schools which are conscious of the fact that their equipment and staff are being severely strained, and that they must consider limitation of entry. But there is a general feeling of hope in the air to-day, and perhaps the severe limitations under consideration in some places may not be necessary. There will not, I feel sure, be any tendency to lower the standard of entry even if numbers do go down a little.

A report will be presented to you by the Finance Committee which shows that for the first time since 1929 the expenditure of the general and branch councils for the last year exceeded their income. The deficit, which amounted in round figures to £650, was primarily attributable to the expenditure of over £1300 unavoidably incurred by the English branch council on account of three contested elections of direct representatives. I am hopeful that before the necessity for further expenditure of this nature again arises, amendments of Section 8 of the Medical Act, 1886, which will simplify and cheapen the procedure, will have been secured by legislation. As regards our financial position generally, I think I may so far anticipate the statement to be made by the treasurers as to say that on a broad view of the results of the last quinquennium, we may regard with composure the deficit for the year 1934 if we set against it the surpluses, amounting in all to over £3500, realised in the other four years of that period.

At the conclusion of his address a vote of thanks to the President was proposed by Mr. G. H. Edington, and seconded by Dr. H. G. Dain. Dr. John Ritchie, the new Crown nominee, was introduced by Mr. Ernest Miles. Sir Robert Bolam was re-elected chairman of business.

After deliberation in camera, the President announced that the name of Ernest Wardman Willbourne had been restored to the Register. The Council then proceeded to the consideration of penal cases.

PANEL AND CONTRACT PRACTICE

A Californian Health Insurance System

THE citizens of California have long been noted for their independence of outlook, receptivity to new ideas, and readiness to adapt themselves to the changing conditions of modern life. Hence it is not surprising that California seems likely to be the first State of the American Union to adopt compulsory health insurance, which, incredible as it may appear to medical men in this country, is regarded by many American doctors as a step towards a system of socialised medicine of the Russian type. A health insurance Bill has recently been introduced into the State legislature, and since it is supported by the California Medical Association it is expected to become law. The Bill is the outcome of an investigation into sickness costs recently completed by a committee of the legislature, which produced results believed by the investigators to be representative of the conditions throughout California. Some 20,000 families were studied, of which 15 per cent. had annual family incomes of less than $500, 39 per cent. less than $1000, and 51 per cent. less than $1200. The investigators found that large numbers of the poorer classes do not receive the medical care they need, and that much of the care that is received is given at the cost of the attending doctors; no less than 70 per cent. of the total amount due for medical services to families with annual incomes below $3000 is not recovered by the doctors giving the services.

This result is the more remarkable since California has suffered less than most States from the economic depression. The survey indicated also that in 1933 one-third of the California doctors were earning net professional incomes of less than $2000, one-half less than $3000, and three-fourths less than $5000. Such being the earnings of a large proportion of the medical profession in a community in which the cost of living is higher than in this country, it is not surprising that many doctors are supporting the health insurance Bill; for State health insurance, whatever its defects may be, eliminates, so far as the insured population is concerned, such deplorable features of medical practice as unpaid services, bad debts, and costs of collection. The system set up by the Bill is on a compulsory and contributory basis, both employers and employees paying their shares of the cost of the system. The contributions will vary with the wages earned; the employees will pay 3·5 per cent. of their wages and the employers 1·5 per cent. Medical and dental treatment will be provided for the insured persons and their dependants; and as additional benefits, home nursing and institutional convalescent care may be given. No provision is made for cash benefits. The system presents features that illustrate the latest tendencies in European health insurance: separation of medical services from cash benefits, free choice of doctor from among the doctors undertaking insurance services, extension of medical treatment to the dependants of insured persons, and participation of the medical profession in the administration of the system, which will be controlled centrally by a commission of five members, two of whom must be doctors and three laymen.

A novel feature of the system, which, so far as we are aware, has no counterpart elsewhere, is that a doctor undertaking insurance practice must obtain a licence, renewable annually, from the Commission, for which a fee of $5 is paid, and must execute a bond for a substantial sum to guarantee the due performance of his duties. The Commission is to be given very wide powers, apparently to render it as far as possible free from political pressure. The Bill if it becomes law will furnish an interesting and distinctively American contribution to the problem of providing care for the poorer sections of the community; and doubtless it will in its practical working do much to reassure those doctors in other States of the Union in whose minds compulsory health insurance is associated with the Red Flag.

Medical Benefit in Scotland

From the sixth annual report of the Department of Health for Scotland we learn that in the year 1934 some 1,900,000 persons in Scotland were insured—

roughly the same number as in the county of London —in the proportion of two-thirds males to one-third females, or about 54 per cent. of the total male and 26 per cent. of the total female population. Medical benefit for insured persons cost about £1,000,000, of which £170,000 was spent on drugs and appliances. There has been a decline in the extent to which approved societies have utilised the services of regional medical officers for examining insured persons whose continued incapacity for work is considered doubtful. The peak year was 1932; in 1933 there was a reduction of over 8000, and a further similar reduction brings the figure down to 44,870. Recently, except in 1933, the references in respect of men have been fewer than in respect of women, and the return to the normal in 1934 is accounted for by the reduction in the number of references being greater for men than for women. The proportion of cases in which the R.M.O. agreed with the medical practitioner that the insured person was incapable of work was higher—by fully 2 per cent.—in 1934 than in the previous year. Some of the part-time practitioners who examine insured persons are specialists in various branches of medicine. Special blood examinations, fractional test-meals, and urea-concentration tests are available for the R.M.O. in making his decision in difficult cases. An important part of his work, which deserves not to be overlooked, is to give advice in carrying out national health insurance duties. The year 1934 has seen a general improvement in the relationship of the regional medical staff with the insurance practitioner.

The Cost of Drugs

An insurance committee in Lancashire recently had under consideration a report on the cost of drugs per head of the insured population for nine county boroughs. It appeared that the cost last year in pence was: Oldham, 45·9; Blackburn, 44·8; Barrow, 43·6; Preston, 43·3; Bury, 39·4; Burnley, 38·4; Blackpool, 35·0; Rochdale, 34·34; and Bolton, 34·0. The cost per head in London for 1934 was 37·01. The curious fact that in Oldham the cost is a third more than in Bolton doubtless has some good cause which it would be profitable to discover. It may be recalled that Manchester recently looked into the causes of the high cost of supplying drugs and appliances in that area.

Friendly Guidance

The clerk of the London Insurance Committee has issued another of what he calls his "written chats." He opens with an apology that on this occasion the letter is not accompanied by a cheque, expresses his "not entirely unselfish" pleasure at the prospect of the early withdrawal of the economy cuts, and then proceeds as follows:—

There is, however, another very real reason for my writing to you now. As you know, if an insured person on the list of another local practitioner wants to transfer to you, he must, if he is unable to obtain the consent of his own practitioner, write to me for the consent of the Committee to his transferring at the end of the quarter. This consent is given in the form of a red printed slip (A1) attached to the medical card. I know that many insured persons have a disinclination to signing their names, but Part A1 definitely provides for and therefore requires the *signature* of the insured person himself, although in the past we have not insisted upon it any more than we insist upon a signature in Parts "A," "B," "C" or "D" of the medical card. A number of cases have occurred recently, however, in which it has been alleged that the insured person had no desire to change his doctor, but that someone else had engineered the transaction without his knowledge. For your own sake then, will you please, in future, insist that if a person wants to transfer to your list he shall himself sign the Part A1. For my part, it will be my unpleasant duty to reject any transfer acceptances of this kind which are not properly completed by the applicant as well as by the doctor. No one dislikes red tape more than I do, but this particular piece has been forced upon me, and any inconvenience which would arise as a result of it can be prevented if you and your medical colleagues will coöperate by insisting that Part A1 (the red printed slip) and, if possible, medical cards as well, are properly completed before you send them here.

A reference to information attached to medical cards regarding the allocation of insured persons who fail to select an insurance practitioner is followed by a concise statement of what may and should be prescribed by insurance doctors, written from the positive point of view. This should once and for all prevent such inquiries as "Am I permitted to prescribe cod-liver oil for patients other than those suffering from tuberculosis?" or "May I order vaccines for insured persons?" which we understand have actually been received recently. The clerk gives a gentle reminder to any practitioners who may have been remiss in returning medical records, and in a postscript he relents to the extent of indicating that if the recipient is entitled to receive a cheque in connexion with the final settlement for 1934 he will find it enclosed with the letter.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 18TH, 1935

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1990; diphtheria, 1057; enteric fever, 17; acute pneumonia (primary or influenzal), 949; puerperal fever, 53; puerperal pyrexia, 96; cerebro-spinal fever, 19; acute poliomyelitis, 9; acute polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 14; ophthalmia neonatorum, 84. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 24th was 3161, which included: Scarlet fever, 957; diphtheria, 1274; measles, 30; whooping-cough, 388; puerperal fever, 27 mothers (plus 9 babies); encephalitis lethargica, 269; poliomyelitis, 3. At St. Margaret's Hospital there were 19 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 21 (0) from measles, 6 (0) from scarlet fever, 21 (4) from whooping-cough, 37 (3) from diphtheria, 30 (9) from diarrhœa and enteritis under two years, and 73 (5) from influenza. The figures in parentheses are those for London itself.

Diphtheria occasioned 5 deaths at Liverpool, 3 at Hull, 2 each at Leeds, Manchester, and Oldham. Six fatal cases of measles were reported from Wigan, 3 from Sunderland. Deaths from whooping-cough numbered 3 at Middlesbrough and at Stoke-on-Trent. Of the much diminished deaths attributed to influenza 6 were reported from Manchester, 5 from Middlesbrough, 4 from Leeds, 3 each from Acton, Blackburn, Bradford, Sheffield, and Birmingham.

The number of stillbirths notified during the week was 289 (corresponding to a rate of 40 per 1000 total births), including 51 in London.

WEST LONDON HOSPITAL.—The Silver Jubilee extensions to this hospital will be finished in a few months' time, when the institution will be equipped with up-to-date casualty, X ray (diagnostic), and pathological departments. About £20,000 is still required to cover the cost.

CORRESPONDENCE

STIMULANTS OF METABOLISM

To the Editor of THE LANCET

SIR,—In your last issue Prof. E. C. Dodds and Dr. J. D. Robertson comment on the statement by Sir William Willcox that dinitro-phenol and dinitro-o-cresol are poisons to the liver and kidney cells. I do not think that anyone has much experience of the post-mortem findings in humans poisoned by these drugs, but I performed the autopsy in one proved case of poisoning by dinitro-o-cresol and examined the liver microscopically in a second where "some slimming drug" had been taken. In both these women there was severe damage to the liver and in the first case to the kidney also. It is interesting that the fat in the liver shows a very high proportion of fatty acid so that it stains a bluish purple with nile blue sulphate. In the proved case, the cause of death was respiratory failure due to pressure on the medulla by the cerebellum in the foramen magnum owing to the severe œdema of the brain, the pressure cone being well marked. It is difficult to understand how this could be produced solely by over-stimulation of metabolism.

Donald Hunter (THE LANCET, 1933, ii., 995) recorded the results of treating over 500 fat women in the east end of London with diet alone. They lost an average of 20 lb. each in three months, and none complained of hunger during treatment. It would seem to a mere morbid anatomist that reduction of weight might be brought about more safely and cheaply by suitable diet than by the use of drugs which all admit may easily prove fatal if not administered with great care and controlled by frequent measurements of the basal metabolic rate, and whose sole indication would appear to be to allow self-indulgence without obesity. Has Prof. Dodds changed his opinions since he gave the opening address at the Middlesex Hospital medical school in 1933? (THE LANCET, 1933, ii., 1933).

I am, Sir, yours faithfully,

WILFRID D. NEWCOMB.

St. Mary's Hospital, W., May 24th.

To the Editor of THE LANCET

SIR,—I have read with interest Prof. Dodds and Dr. Robertson's letter referring to the use of dinitro-phenol and dinitro-o-cresol in the treatment of obesity. They state that "provided a careful watch is kept on the patient and the basal metabolic rate is measured frequently, there is no danger in their use." Can a careful watch be kept over obese patients who are reducing in their own homes? These constitute the vast majority of would-be-reducers. The physician is lucky if he sees them once a week. Moreover, the average doctor has not the means, nor the average patient the money, to pay for repeated B.M.R. tests. The penalty for failure to adjust the dosage correctly is a series of exceedingly uncomfortable symptoms, and graver effects have actually been recorded.

The writers of the letter "feel that the important point to be emphasised is that the real risk arises from indiscriminate use of the drug." Dinitro-o-cresol received a wide advertisement in March, 1934. Once a drug is on the market, often it jumps from the hands of the expert into the arms of the foolish. Its indiscriminate use cannot be prevented. This is particularly true of weight-reducing medicines in general, many stout people being willing to try any means of slimming which does not impose dietetic restriction.

The cure of obesity by correct dieting is safe and certain. Can the same be said after the administration of such drugs as dinitro-phenol and dinitro-o-cresol? Their action in raising a normal basal metabolism to an abnormal level may seem an ingenious way of increasing output over intake but it must be a highly unnatural one. The short-cut to slimness is usually fraught with perils. If, of course, all cases of obesity could be attached to a laboratory for repeated investigations, eliminating the untoward happenings which may occur, I should not have written this letter. Until then, however, I agree with Sir William Willcox that their use should be avoided in clinical practice.

I am, Sir, yours faithfully,

W. F. CHRISTIE.

Lancaster Gate-terrace, Hyde Park, May 26th.

A CASE OF CANNABIS INDICA INTOXICATION

To the Editor of THE LANCET

SIR,—In the issue of THE LANCET dated April 6th, page 811, a clinical note under this title appeared, written by Dr. E. T. Baker-Bates, assistant honorary physician to the Royal Southern Hospital, Liverpool. The circumstances of the case made a popular appeal. In particular an article appeared in the *Liverpool Echo* with sensational cross-headings based upon the story as told in the columns of THE LANCET.

This patient was seen by me on Sept. 28th, 1933. She was admitted to the Stanley Hospital, Liverpool, at my request, and detained there for not more than 24 hours, where Dr. Baker-Bates was then on the staff. The original investigation of the case was conducted by me, and at first the police in Liverpool held the view that the plant, the smoking of whose leaves had caused the intoxication, was not cannabis indica but mugwort, and I was subjected to some "leg-pulling" by the police until an examination by Prof. Walter Dilling proved my diagnosis correct. I read a note at the time to the Liverpool Twenty Club on the case—this is a club of medical men which discusses papers on medical and lay subjects, and its proceedings are influential on things medical in Liverpool. Dr. Baker-Bates was present at the meeting as a guest. Six weeks ago I read the same note to the Wallasey Medical Society.

After the publication of the account of the case by Dr. Baker-Bates in THE LANCET of April 6th, 1935, and the long comment on it in the *Liverpool Echo*, I received the following letter from the chief constable of the Liverpool City Police, Mr. A. K. Wilson: "I read the other evening in the *Liverpool Echo*, and subsequently in THE LANCET, an article purporting to emanate from Dr. E. T. Baker-Bates respecting a case of cannabis indica poisoning in Liverpool. As the only case the police of this city have on record is that of Miss ——, of ——, Liverpool, which occurred on Sept. 28th, 1933, and which you investigated, I should like to know if the reports in the *Liverpool Echo* and THE LANCET refer to your case, or whether another case has arisen which has not been brought to the notice of the police. I observe so striking a similarity between the article in THE LANCET and the article written in the *Police Journal* of July-September, 1934, by my assistant, Mr. H. Winstanley, that I am forced to the conclusion that the same case is referred to. I did not

know that Dr. Baker-Bates took any part in your investigation, but perhaps you will let me know in your reply if he did so. With regard to the *Liverpool Echo* report, I think you will agree with me that it is definitely not in the public interest that a case of this nature should be reported in the popular press." The chief constable enclosed a copy of the article which appeared in the *Police Journal*, July-September, 1934, and the similarity of the facts as stated in that article with those given in the article in THE LANCET is striking.

In his communication to THE LANCET Dr. Baker-Bates made no mention of my connexion with the case further than that "she was taken to a doctor and the history explained; he recorded, &c."; nor has he ever applied to me for any information; but the symptoms which he mentions are stated in almost the same words as those which appear in Mr. Winstanley's article in the *Police Journal*.

I am placed in a peculiar position on which there has already been comment, for when the case actually occurred it created some sensation and there is no doubt that the Liverpool police, the members of the Twenty Club, the Wallasey Medical Society, and many members of the profession in Liverpool all understood that the case had originally come under my treatment. I wrote to Dr. Baker-Bates on April 10th last, sending him a copy of the letter from the chief constable of Liverpool and asking for the source from which he obtained the notes which his article in THE LANCET stated to be "recorded" by a doctor. He telephoned in reply, and was told that I preferred not to discuss the matter on the telephone. Since then I have heard nothing from Dr. Baker-Bates.

I am, Sir, yours faithfully,

Wallasey, May 18th. W. A. J. FLEMING.

ADMINISTRATION OF CARBON TETRACHLORIDE FOR HOOKWORM

To the Editor of THE LANCET

SIR,—Having read from time to time of deaths caused by carbon tetrachloride, I have come to think that the method of administration may have some influence. I have treated many hundreds of cases of ankylostomiasis on various estates and give carbon tetrachloride to all the labour force as a routine measure every six months. Only in very exceptional cases, however (perhaps one in a thousand), has there been any complaint even of discomfort, when the man treated has complained that the medicine "made him feel a little drunk." In the great majority of cases there has been no apparent discomfort, and the patient has gone about his daily duty immediately after receiving his dose.

Adults receive Tetraform 3 c.cm. in ol. ricini 15 c.cm., or approximately tetraform ℥ss in castor oil ½ oz. The mixture has to be thoroughly shaken, for the tetraform is heavier than the oil. Occasionally, in cases of Europeans "who cannot take castor oil," Internol (paraffin. liquidum B.D.H.) is substituted for the castor oil; it seems equally effective and the taste of the mixture is even pleasant, one patient likening it to raspberry flavouring.

Thus diluted, carbon tetrachloride seems to have no ill-effect, so I am passing on the information to those who give it otherwise. No purgative is needed after its use, and this is an advantage for all concerned.

I am, Sir, yours faithfully,

A. S. TUXFORD, L.M.S., H.K.

Lahad Datu, North Borneo, Jan. 26th.

PSITTACOSIS AND VIRUS INFECTION

To the Editor of THE LANCET

SIR,—The observations on so-called psittacosis recorded in your last issue may be interpreted otherwise than in your leading article. From my work on infections in general I infer that this condition belongs to what I term "infections from within"—i.e., infections caused by the mutation forms of the *Bacillus coli communis* in the large intestine, some of which develop (the earliest to mutate) into coccoid, sub-coccoid, and ultra-microscopic forms at certain periods in man and animals alike. The development into sub-phases is determined by the resistance of the host, a phenomenon which results from the establishment of immunity. It so happens that the changes occurring in the bacterial flora in the excreta in man are paralleled by those which take place in seed-eating birds, particularly in those recently brought into captivity. In the winter 1929–1930 the *Bacillus fæcalis alkaligenes* was terminating a cycle, the result being its development into sub-phases, some of which were responsible for one of the forms of influenza prevalent at that time. As the hosts had not had time to establish an immunity against these sub-phases, being newcomers, infections not only arose spontaneously in man and certain animals, but also they were intercommunicable. Recently the *Streptococcus fæcalis* has been undergoing a similar change, and the new cases of so-called "psittacosis" arising are being caused, both by the parent micro-organism and by the sub-forms into which the immunity of the hosts is making it develop.

As no infections occur naturally through the intraperitoneal route, it is not justifiable to draw inferences from what happens when this route is employed to cause an infection artificially; indeed, no reliance is to be placed upon experiments conducted on animals with micro-organisms which are pathogenic to man. Extracts of organs damaged by drugs and passed through filters may occasion manifestations of disease when injected intraperitoneally and intracerebrally, indistinguishable from those met with in infections; from which the inference may be drawn that all invaders, be they micro-organisms, physical agents, or chemical poisons, act fundamentally in the same way in producing disease.

The whole subject of disease wants overhauling, and no part of it more than the most recent one which deals with ultra-microscopic viruses. Because all of them are sub-phases of certain well-known bacilli and many when not formed naturally, may be readily generated by the actual process of filtration. If correlation were practised in place of differentiation, I am convinced so-called "psittacosis" would be found to be a form of influenza and not a specific infection. Influenza is always with us and filtrable viruses only play a part in its production when their parent bacilli are completing a cycle. And not all the bacilli responsible have reached the stage where they are capable of developing into sub-phases. The micro-organisms which have been extant sufficiently long to form sub-phases are Friedländer's bacillus, the *Bacillus fæcalis alkaligenes*, *B. proteus* X 19, and a certain streptothrix, and some of those formed by the last two have received the names of "rickettsia" and "pasteurellæ," respectively. Some of those formed by the *Bacillus fæcalis alkaligenes* have been classed amongst the pfeifferellæ and those formed by Friedländer's bacillus and its offspring the *Streptococcus fæcalis* have so far not been named, despite the fact that the infections caused by them are those best known. Many sub-phases are of

the same nature as those which are called "toxines" when liberated by the clostridia, thus explaining why these micro-organisms do not form spores when they cause disease. They cause disease only when the resistance of the host breaks them down, or subjects them to dehydration, whereas spore formation is an exhibition of hydration.

I am, Sir, yours faithfully,

Wimpole-street, W., May 28th. J. E. R. McDONAGH.

ERGOMETRINE

To the Editor of THE LANCET

SIR,—It is unfortunately necessary to comment very briefly on the letter by M. S. Karasch and R. R. Legault, which you published under the heading "Ergotocin" in THE LANCET of May 25th (p. 1243). For the guidance of those who might otherwise be misled, I wish simply to state that all the available evidence indicates that the substance isolated by Karasch and Legault, to which they have transferred the trade name "ergotocin," is identical with the alkaloid ergometrine, which Moir and I originally described in the *British Medical Journal* of March 16th. Both my own subsequent preparations, in quantities permitting adequate recrystallisation, and those of several British manufacturers which I have examined, possess all the properties mentioned by Karasch and Legault, and the uncritical suggestion that "ergotocin" may be chemically different from ergometrine and clinically more potent may be dismissed without hesitation. I am, Sir, yours faithfully,

H. W. DUDLEY.

National Institute for Medical Research, Hampstead N.W., May 25th.

TREATMENT OF SCABIES

To the Editor of THE LANCET

SIR,—Scabies occurs mostly in those seeking free hospital treatment where expense is a matter of importance. Sulphur ointment is cheap and is reasonably efficient, and will cure scabies in a few days. This is the justification for sulphur treatment in spite of the objections indicated by Dr. Fraser. In private practice more elegant and expensive preparations as Bayer's Mitigal (dimethyldiphenylene-disulphide) or benzylbenzoate (according to Haxthausen's prescription) are employed and are more efficient than sulphur. Pesticides such as those employed for destroying beetles are likely to be dangerous, since they may be absorbed and the whole skin of a patient suffering from scabies requires treatment, not only his hands and arms. Not sufficient is known of the possible toxic effects of carboxide, ortho-dichlorbenzene, and such pesticides to allow of their being used on human skins, but Dr. Fraser's letter suggests a useful line of research.

I am, Sir, yours faithfully,

Leeds, May 25th. JOHN T. INGRAM.

OBITUARY

THOMAS CUNNINGHAM PENFOLD, M.B., C.M. Edin.

THE death occurred in a Newcastle nursing-home on May 13th of Dr. Thomas Cunningham Penfold, medical officer of health to the Chester-le-Street rural district council. He was a very capable public servant and rightly won the appreciation of the community for which he worked.

Dr. Penfold was born in 1872, the son of Mr. J. B. Penfold, of Brampton, Cumberland, and received his medical education at the University of Edinburgh and King's College, London. He graduated as M.B., C.M. Edin. in 1894, and took the English double qualification several years later, while in 1908 he obtained the diploma of D.P.H. R.C.S.I. For a few years he was in general practice, part of that time being associated with his brother, Dr. W. J. Penfold, now the director of the Baker Research Institute at Melbourne; but in 1901, having decided to enter the public health service, he was appointed medical officer of health for Hexham rural district council. In 1914 he was appointed to the same post with the Bishop Auckland rural district council, and 10 years later, following a redistribution of the public duties, he became medical officer of health to Chester-le-Street. The period over which Dr. Penfold's public work extended will be seen to have been an important one in sanitary administration. He commenced his official duties with the present century, and he was therefore engaged in the promotion of all the changes in public sanitation, in State education as bearing on health, and in the formulation of regulations for the promotion of child welfare which were making their appearance before the outbreak of war, and which during the last 15 years have manifested general activity and, in some directions, remarkable progress. As was natural, having regard to the county in which his duties lay, he had the plight of the mining population always present to his mind, and wherever possible he assisted the miners in their profound difficulties. The slum clearance scheme set in motion by his rural authority is a large undertaking which was initiated with his counsel, and the help which he rendered in this direction will not be forgotten on its completion.

Dr. Penfold married Miss Isa Johnstone, of Brampton, and leaves a widow and three daughters.

Dr. ABRAHAM GROVES.—News of the death of Dr. Abraham Groves, of Fergus, Ontario, has reached us this week. He was 88 years of age, and only last year recorded his life work in a book entitled, "All in the Day's Work," which was recently reviewed in these columns. His autobiography showed him to have been throughout more than 60 years of active practice an original and capable surgeon, while he was the first man in Canada to make an abdominal section for the relief of appendicitis. His early operating feats, as recorded by himself, were marked by ingenuity and followed, in some cases, with unusual success. He was for many years medical superintendent of the Royal Alexandra Hospital, Fergus, which has been renamed the Groves Memorial Hospital in his honour, and he thoroughly deserved the public recognition.

Dr. JOHN PRATT, who was drowned on May 26th when a rowing boat capsized off the Cumberland coast, was medical officer of health for the Millom rural district council and superintendent of the Millom and Bootle infectious diseases hospitals. He was educated at Queen's College, Cork and Dublin, qualifying in 1904. He served as a temporary surgeon lieutenant in the Navy from November, 1914, and was awarded the Distinguished Service Cross in the following year. He had recently recovered from pneumonia.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

National Health Insurance Bill

ON May 23rd the National Health Insurance and Contributory Pensions Bill was introduced in the House of Commons and read a first time. The principal objects of the Bill are:

(1) To secure that persons who have been contributing to the interlocked schemes of National Health Insurance and Contributory Pensions for a sufficiently long period shall not forfeit their pensions rights or all their health insurance rights if they become unemployed and if the continued absence of contributions is due only to the fact that they are unable to obtain employment; and

(2) to provide that insured persons who are covered for sickness, disablement, and maternity benefits under the Health Insurance Scheme shall not suffer any reduction or suspension of those benefits by reason of arrears of contributions due to unemployment.

The cost of medical benefit and additional treatment benefits of unemployed insured persons will fall equally on the funds of approved societies and on the National Exchequer. It is proposed to set up a new Unemployment Arrears Fund contributed to equally by a levy on the contributions of members of approved societies and by an annual Exchequer grant. The amount of the levy will be such that when added to the equivalent Exchequer grant the sum will enable a grant to be made to each approved society at the rate of threepence halfpenny each week of proved unemployment of its members. In effect the Fund will spread over all the societies the burden of loss of contributions due to unemployment, each society contributing according to the volume of employment, and each receiving a grant in proportion to the amount of unemployment among its members.

The amount required for this purpose is estimated at nearly £1,500,000 a year. A Supplementary Estimate will not be necessary for the current financial year as the Bill provides that any disposable surpluses of the Navy, Army, and Air Force Insurance Fund not required for maintaining the additional prescribed additional benefits are to be paid into the Arrears Fund. At the valuation at the end of 1932 the available surplus was £701,000, and with the accrued interest this ought to be sufficient to provide the Exchequer grant for the first year. Under Clause 11 of the Bill arrears due to unemployment, which under the existing law are excused only to the extent of one-half will be excused in full from July 2nd, 1934. The effect of this concession is that any person who remains unemployed throughout a free insurance period will suffer no reduction of benefits during that period by reason of unemployment. It will also prevent any reduction in the benefits of the very large number of persons who, although in fairly regular employment, have varying periods of unemployment in the course of a contribution year. The increased cost involved in the complete excusal of arrears due to unemployment will also be met out of the Arrears Fund.

Water-supplies Inquiry

In the House of Commons on Monday, May 27th, Mr. ATTLEE asked the Minister of Health whether he could state the extent of the proposed inquiry by a Select Committee into water resources and supplies, and what powers it was proposed to give to the committee.—Sir HILTON YOUNG replied that the law relating to water-supplies required amendment in various particulars and proposals for this purpose had been made from time to time, including proposals in three reports of the Water Advisory Committee of his Department. It was considered that the most appropriate method of investigating the amendments desirable was by a Joint Committee of both Houses of Parliament, who could hear the various interests concerned. The Committee would, of course, be at liberty to investigate other aspects of the matter which they considered relevant to this purpose. It was proposed that the Committee should have the usual powers: to hear evidence and to make recommendations.—Sir F. FREMANTLE asked whether it would be within the purview of this Committee to consider the question of drains and sewage.—Sir HILTON YOUNG said that the specific purpose of the inquiry was to consider the water-supply, but his hon. friend would know that one could not consider that question without giving some consideration to the question of sewage.

Indian Civil Servants and Medical Attendance

In the House of Commons on May 28th, when the Government of India Bill was further considered on report, Mr. BUTLER (Under-Secretary for India) moved an amendment providing that the rights of all persons appointed to a civil service post by the Secretary of State in regard to medical attendance should be prescribed by rules made by the Secretary of State. He said that the Secretary of State had considered with great sympathy certain representations which had been made to him during the Committee stage of the Bill and he had decided that there was a case for adding the general rights in regard to medical attendance of civil servants to the questions on which the Secretary of State would make rules. This was a matter to which members of the civil service attached great importance. They had at present certain rights entitling them to medical treatment for themselves and in certain cases for their wives and families. The availability, for example, of a British medical officer in a station where there was a substantial body of civilians was a right to which they attached great importance and in view of the conditions of service in India and the special problems which arose in regard to medical attendance there he thought that the House would regard it as legitimate that this amendment should be made to the Bill.

The amendment was agreed to.

In the House of Lords on Wednesday, May 22nd, the West Riding of Yorkshire Mental Hospitals Board (Superannuation) Bill was read the third time. The Bill was introduced in the House of Commons on the same day and read a first time.

HOUSE OF COMMONS

WEDNESDAY, MAY 22ND

Ex-Servicemen in Edenhall Hospital

Mr. GUY asked the Minister of Pensions how many ex-Service men were undergoing treatment in Edenhall Hospital, and how many of these were in receipt of treatment allowances.—Major TRYON replied: There were 82 men undergoing treatment in Edenhall Hospital on May 20th. In 63 of these cases the men are in receipt of treatment allowances or continue to receive remuneration in excess of the treatment allowances which would otherwise be payable, and 15 are receiving allowances at pension rates. Of the remaining 4 cases 2 are at present under consideration.

Vivisection Certificates

Mr. GROVES asked the Home Secretary on what grounds a certificate for vivisection was issued, in view of the ambiguity of the wording of the licences and the wide powers conferred by various classes of certificates; and what steps, if any, were being taken to ensure that licences were not issued to persons merely interested for commercial ends.—Sir JOHN GILMOUR replied: Certificates given under the provisos to Section 3 of the Cruelty to Animals Act, 1876, dispensing with some of the conditions laid down in the earlier part of the section are given by

the scientific authorities named in Section 11 of the Act, and not by the Home Office. A copy of any certificate given must be forwarded to the Secretary of State and does not come into operation until one week after a copy has been so forwarded. The power of the Secretary of State is confined to disallowing or suspending any certificate given under the Act.

Mr. GROVES asked the Home Secretary which establishments or individuals held licences for vivisection and did not fall into the category of either public or private companies.—Sir JOHN GILMOUR replied: Licences to perform experiments on living animals under the Cruelty to Animals Act, 1876, are in all cases granted to individuals, and not to establishments or public or private companies.

THURSDAY, MAY 23RD

Medical Referees and Nystagmus Cases

Mr. TINKER asked the Home Secretary if he was aware of the feeling amongst the workmen suffering from nystagmus against there being only one medical referee to decide on cases sent before him, and if he would consider the advisability of making two medical referees in place of one to certify the condition of the workman.—Sir JOHN GILMOUR replied: The hon. Member's suggestion would involve an important departure from the present provisions as to medical certification which could not be adopted without full inquiry. The whole position in regard to this disease is under consideration.

Poisons and Pharmacy Act, 1933

Mr. HALL-CAINE asked the Home Secretary what progress had been made with the drawing up of a new list of poisons under the Poisons and Pharmacy Act of 1933; and by what date it was anticipated this new list would be available.—Sir JOHN GILMOUR replied: I am informed that the Poisons Board has prepared the Poisons List and is about to submit it to me, together with its recommendations in regard to the rules to be made under the Act. It is hoped that the proposals of the Board will be available to Members before the Whitsun recess.

Protection of Civilians from Gas Attack

Mr. MANDER asked the Home Secretary if he would give particulars of the work to be undertaken by the Legion of Frontiersmen in connexion with the protection of the civil population during gas attacks; and whether this included gas-mask drill, compulsory or otherwise.—Sir J. GILMOUR replied: I understand that the Legion of Frontiersmen, like some other voluntary organisations, is in touch with the Order of St. John and the British Red Cross Society with a view to assisting in the measures to be organised by those bodies for the alleviation of the consequences of air attack. I have informed the Legion that in my opinion assistance of this nature would be work of national importance. No specific duties have been allotted to this body at present, and any drill which may have been undertaken has been arranged voluntarily.

Flooding in Palestine; Fear of Malaria Epidemic

Mr. LECKIE asked the Secretary of State for the Colonies whether he was aware that on May 1st last the Sea of Galilee overflowed its banks and flooded the cellars of some of the houses in Tiberias, as well as the low-lying ground; that, owing to the formation of stagnant pools, there was fear of an epidemic of malaria; and whether he would take steps to insist that the sluices in the River Jordan should be kept open to prevent the raising of the lake in future above its normal level.—Sir PHILIP CUNLIFFE-LISTER replied: I have no information regarding the situation referred to in the hon. Member's question, but I have asked the High Commissioner for Palestine for a report.

Sewage Purification on the Tweed

Captain RAMSAY asked the Secretary of State for Scotland whether he was aware that at times when the water level of the upper reaches of the River Tweed was low there was serious pollution of the river through sewage and trade effluents, and that this state of affairs was likely to become much more marked by the present scheme to impound a substantial quantity of the head water for the Edinburgh supply; and what action he proposed to take.—The Lord ADVOCATE replied: With regard to the first part of the question my right hon. friend is aware that there is considerable pollution of the Tweed at certain points by sewage and trade effluents. With regard to the second and third parts, the proposals of the Edinburgh Corporation are contained in a Draft Provisional Order which has been lodged by the corporation and is being considered in accordance with the Private Legislation Procedure (Scotland) Acts, 1929 and 1933. In the circumstances my right hon. friend regrets that he can make no comment on the latter at present.

MONDAY, MAY 27TH

Births in England and Wales

Mr. GEORGE GRIFFITHS asked the Minister of Health the number of births in England and Wales for the years 1932, 1933, and 1934.—Sir HILTON YOUNG replied: The following is the information asked for:—

England and Wales: years.	Live births.	Stillbirths.	Total live and stillbirths.
1932	613,972	26,471	640,443
1933	580,413	25,084	605,497
1934 (provisional)	597,642	25,209	622,851

Maternal Mortality: Suggested Royal Commission

Mr. GRAHAM WHITE asked the Prime Minister if he would consider the advisability of appointing a Royal Commission to conduct a comprehensive inquiry into the causes of maternal mortality and make recommendations in regard thereto.—Mr. MACDONALD replied: No sir; I am not at present satisfied that an inquiry into the subject by a Royal Commission would be of advantage. I would refer the hon. Member to the answer given by the Minister of Health on March 28th (THE LANCET, April 6th, p. 838). The hon. Member will see that special inquiries are in progress in those areas where the incidence of maternal mortality is, or has been, most marked, and that when those inquiries are completed, my right hon. friend proposes to lay a White Paper on the subject before the House.

Infant's Death after Vaccination

Mr. GROVES asked the Minister of Health whether he was aware that Margaret Jane Pinnock, of Staines Road, Laleham, a one-month old baby, died from vaccination performed when the infant was five days old in order to enter an adoption home; and whether he would communicate with the societies that arrange for the adoption of children and remind them of the advice given in the last Report of the chief medical officer of the Ministry, to the effect that the authorities of such institutions should abolish their vaccination regulations.—Sir HILTON YOUNG replied: I am aware of the case referred to in the first part of the question. As regards the second part, I do not find that the last report of the chief medical officer of my Department advised that the authorities of institutions should abolish their vaccination regulations. The passage in the report to which the hon. Member appears to refer is not relevant to this case as it relates to the vaccination of adolescents and children of school age who have not previously been vaccinated.

Milk for School-children

Sir PERCY HURD asked the Minister of Health whether he was taking any action in respect of the refusal of certain county council medical officers to sanction the supply to schools of other than pasteurised milk; and whether his Ministry held it to be within the competence of medical officers to exercise their discretion in a manner contrary to instructions from their councils.—Sir HILTON YOUNG replied: The answer to the first part of the question is in the negative. As regards the second part of the question, I am advised that under the arrangements made by the Milk Marketing Board for the supply of milk at reduced rates, the approval of the source and quality of the supply is a matter for the professional discretion of the Medical Officer of Health.

TUESDAY, MAY 28TH

Medical Reports and Remand of Prisoners

Captain CUNNINGHAM-REID asked the Home Secretary whether he had considered the recommendation contained in the Report of the Commissioners of Prisons for 1933 that it would be an advantage in police-court cases if the usual period of remand for eight days on bail or in custody could be extended to 14 or 21 days, without producing the prisoner, if the court was satisfied by a medical report that such extension was desirable to ascertain the mental condition of the prisoner; and whether he proposed to accept this recommendation and implement it by the introduction of the necessary legislation.—Sir J. GILMOUR replied: This recommendation has been noted for consideration when there is an opportunity for legislation, but I cannot say when it will be possible to give effect to it.

Casual Labourer's Death at Portsmouth

Mr. THORNE asked the Home Secretary if he had received a report from his factory inspector in connexion with the death of a casual labourer at Portsmouth who was assisting to carry an acetylene welding-plant; if he could state the cause of the accident; and whether he had any record of similar cases.—Sir J. GILMOUR replied: I have received a preliminary report from which it appears that the accident occurred in an unusual manner owing to sparks entering an acetylene generator which was not altogether cleared of gas. The case will be followed up with a view to the prevention of any similar accident.

Shorter Hours in Industry

Captain FULLER asked the Minister of Labour if any steps were now being taken through the International Labour Office to negotiate agreements for the shortening of hours in industry.—Mr. R. S. HUDSON (Parliamentary Secretary to the Ministry of Labour) replied: Proposals designed to secure International Conventions limiting hours of work in Public Works undertaken or subsidised by Governments, and in the iron and steel, building and contracting, glass bottle, and coal-mining industries, are to be considered at the International Labour Conference which opens in Geneva at the beginning of next month.

KING EDWARD'S HOSPITAL FUND FOR LONDON

THE annual meeting of the Fund was held at St. James's Palace on Tuesday when H.R.H. the Prince of Wales, the president of the Fund, presided over the meeting. He commenced by reading a resolution of congratulation to the King, on the occasion of his Silver Jubilee, which he had already forwarded to His Majesty, and to which the gracious reply from the King was received confirming His Majesty's deep personal interest in the Fund, and the satisfaction with which, as a past president for nine years, he had watched its steady growth until it had become an essential part of the voluntary hospital system of London.

His Royal Highness continued by stating the King's wish that his Silver Jubilee should not be marked by any general appeal on behalf of hospitals, but by the foundation of a new Trust Fund, with a new purpose.

"It is indeed natural," said His Royal Highness, "that this Council should wish to mark the occasion in some exceptional way. The King's Fund was founded to commemorate the Diamond Jubilee of Queen Victoria in 1897; it was augmented by the Coronation gift to King Edward the Seventh in 1902; and its last special appeal was for the Thank-offering Fund for recovery of King George in 1929. The King was its President for nine years, and since his accession has taken an active interest as its Patron.

"Briefly, the proposal is this. During the 25 years of the King's reign the ordinary distribution has been increased from £150,000 a year to £300,000. In other words, it has been exactly doubled. But every year a small margin of the annual income has been kept in hand; a kind of estimated budget surplus. This policy has been successful, and the small margins have accumulated. During the post-war financial crisis a great inroad was made into the reserves by the emergency distribution of £250,000 in 1920, itself a striking illustration of the value of a central fund. But since 1920 the small annual margins have again been accumulating, and they have now reached a total of about £109,000.

"There is also another sum of money available, more closely associated with the Jubilee. It arises from the sale of the seats which were offered to the King's Fund by His Majesty's Office of Works for the processions of May 6th and May 9th, and with the personal approval of the King. This comes to about another £11,000, and raises the available total to approximately £120,000.

"This additional distribution will have a special object. The hospitals themselves have, in spite of the financial depression, gone on extending their work and also increasing their income. The result has been that the hospitals, like the King's Fund, have, taken as a whole, just balanced their budgets, with a small margin on the right side, in spite of deficits at some hospitals where the circumstances are exceptional. The figures for 1934 tell the same tale. It has been the result of a great and most creditable effort on the part of the hospitals and their subscribers, among whom I wish particularly to mention their own patients.

"But this is not enough. It is true that hospital income has just kept pace with the increased expenditure, and there have been some very successful appeals for reconstruction and extension. But a good deal of urgent work in the way of improvements to buildings and equipment has fallen into arrears.

"The money we have available will be enough to enable us to help with some of this work, though not with all of it.

"The proposal, therefore, is that the sum of £120,000, representing the unspent income balances of the last 25 years and the profits from the Jubilee seats, together with any other sums which may be received in connexion with the Jubilee and which the General Council may allocate for the purpose, should be made the subject of a special Silver Jubilee Distribution in the autumn among the hospitals of London, in aid of programmes of capital expenditure already notified to the Distribution Committee."

His Royal Highness went on to say that the accounts showed the income for the year to have just covered the distribution, such small surpluses as it was proposed to distribute having been accumulated before the crisis of 1931, when the annual grants were increased at one bound from £275,000 to £300,000. Since that effort, he said, the margin of income over distribution had been very narrow.

He referred to the out-patients' arrangements committee of the Fund whose report dealt with time-saving methods in the out-patient departments of hospitals, especially the reduction of waiting at the dispensary stage of procedure. The committee had collected information from all the hospitals, had made visits to certain of them, and had circulated their report for the observation of the institutions. His Royal Highness continued:—

"I have now some gratifying news. You already know that of recent years various donors have entrusted the King's Fund with the administration of sums of money for special purposes connected with hospitals. Another example of this has just occurred. The Bank of England have asked King Edward's Hospital Fund to deal on their behalf with appeals which they may receive from London hospitals. With this object the Bank have set aside and paid to the Fund a sum for distribution, this being the first of seven annual payments which they have undertaken to make to the Fund for this

purpose. The sum includes the Bank's usual annual subscription to the King's Fund, and certain annual subscriptions which the Bank has previously made direct to certain London hospitals. The balance is to be distributed by the Fund in response to such appeals from London hospitals as the Bank may receive and forward to the Fund for consideration. The hospitals to be assisted under the latter head, and the allocation among such hospitals, will be determined by the Fund at its discretion.

"It is satisfactory to know that the amount thus entrusted to the King's Fund represents an increase upon the average annual total sum hitherto dispensed by the Bank in direct donations. These grants will be decided in the autumn, just before our ordinary distribution. They will be quite distinct from the ordinary grants, and will reach the selected hospitals as donations from the Bank of England, per King Edward's Hospital Fund. I should like, in your name and in mine, to express our appreciation of the action of the Bank of England, and the pleasure it will give us to use on their behalf all our knowledge of the circumstances of the various hospitals."

His Royal Highness then recorded the loss by death of prominent members of the council since the last meeting, making special reference to Lord Somerleyton, the senior honorary secretary, Mr. Whitley, the chairman of the Parliamentary Committee of the council, and Sir John Rose Bradford, chairman of the out-patients' arrangements committee, adding that he had appointed Lord Macmillan in place of Mr. Whitley, and Dr. Morley Fletcher in place of Sir John Rose Bradford.

ACCOUNTS FOR 1934

Sir Edward Peacock, hon. treasurer of the Fund, in moving the adoption of the accounts, said that at the distribution in December there was still a small deficit, but this was covered before the end of the year, though with a margin of only £426. The total amount distributed was again £320,000. Annual subscriptions were £200 more than in 1933 and donations £1,600 more. Legacies amounted to £77,000. During the past seven years the lowest figure for legacies had been £58,000, and the average had been £70,000. There was no doubt that the King's Fund, with its annual grants to 200 hospitals and convalescent homes, made a strong appeal to testators who wished to leave legacies or residues to charity, but had no particular institution in their minds. But they would be glad to see a larger proportion of the increased distribution provided for by annual subscriptions. He would like to refer to the advantages, both to subscribers and to the Fund, from the use of seven-year agreements, which enabled income tax and surtax to be saved. Last year the Fund received 67 annual subscriptions under agreements of that kind, ranging from £1 1s. to £4000, and amounting almost exactly to £14,000, the total received to date being £128,000.

The motion for the adoption of the Accounts, having been seconded by Sir Basil Mayhew, was then put and carried unanimously.

THE ANNUAL REPORT

The annual report for 1934 was adopted unanimously while the report of revenue and propaganda committees was presented and a resolution passed unanimously that it should be published. Lord Donoughmore then presented the report on

THE SILVER JUBILEE DISTRIBUTION

when he moved the recommendation that the sum of £120,000, representing the unspent income balances of the last twenty-five years and the profits from the Jubilee seats, together with any other sums which might be received in connexion with the Jubilee and which the general council might allocate for the purpose, be made the subject of a special Silver Jubilee Distribution in the autumn among the hospitals of London, in aid of programmes of capital expenditure already notified to the distribution committee by May 28th, the date of the council meeting.

The recommendation was seconded by Sir Ernest Pooley and carried.

The meeting closed with a vote of thanks to his Royal Highness, which was proposed by the Bishop of London, and seconded by Prof. Winifred Cullis. The vote having been carried with acclamation, His Royal Highness briefly acknowledged the vote.

MEDICAL NEWS

Society of Apothecaries of London

At recent examinations the following candidates were successful :—

Surgery.—A. Aspinall, Univ. of Manch.; W. H. Bayley, St. Thomas's Hosp.; W. C. Campbell, Univ. of Birm.; F. Hawking, Univ. of Oxf. and St. Bart.'s Hosp.; H. N. Levitt, Guy's Hosp.; J. Mason, Middlesex Hosp.; A. G. Sweetapple, Univ. of Sydney; and R. L. Walmsley, Univ. of Camb. and Univ. of Leeds.

Medicine.—H. Burrows, Univ. of Manch.; E. H. E. Cross, St. Mary's Hosp.; R. N. Crossley, Univ. of Manch.; C. S. J. Dandekar, Univ. of Durham; H. O. Dole, Univ. of Manch.; H. A. Kamel, Welsh National School of Medicine; B. S. Minden, St. George's Hosp.; J. C. Paterson, Univ. of Oxf. and St. George's Hosp.; A. G. Sweetapple, Univ. of Sydney; and G. W. Van Mentz, London Hosp.

Forensic Medicine.—N. A. Bicchieri, St. George's Hosp.; H. O. Dole, Univ. of Manch.; and A. G. Sweetapple, Univ. of Sydney.

Midwifery.—F. Brodahl and E. T. Garthwaite, St. Bart.'s Hosp.; W. J. Pinto, Univ. of Madras; A. G. Sweetapple, Univ. of Sydney; P. A. Walshaw, Univ. of Leeds; and J. L. Wredden, London Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery :—

W. C. Campbell, E. H. E. Cross, R. N. Crossley, C. S. J. Dandekar, J. Mason, B. S. Minden, J. C. Paterson, A. G. Sweetapple, and J. L. Wredden.

Manchester Hospital Scheme

The Manchester public health committee are considering a £50,000 scheme for the construction of a new wing at Baguley Sanatorium.

University of Glasgow

The following degrees have lately been conferred :—

M.D.—*W. R. Snodgrass, †David Clyde, ‡W. A. Murray, ‡M. M. Scott, ‡William Tennent, ‡J. A. Waterman, John Leishman, E. W. McCormick, Jean M. Mackintosh, A. W. McRorie, C. D. F. Morton, and F. R. Wilson.

M.B. Ch.B.—*A. M. Pugh, *Theodore Crawford, *R. G. Henderson, ‡D. H. Wallace, ‡J. A. C. Knox, ‡J. B. Brown, R. G. Anderson, S. Y. Baird, B. N. P. Bannatyne, R. S. Barclay, P. M. Bennett, A. C. Blair, W. M. Boyd, Donald Campbell, Elizabeth N. Christie, D. S. Crawford, W. F. Cruickshank, I. M. Drysdale, J. W. Eidlin, A. W. V. Eley, A. D. Fleming, Maev Gallagher, Mima M. Gemmell, W. R. Gemmell, H. B. Gillespie, Abraham Glasser, Julius Gordon, J. F. Harper, Phebe N. Harvey, Wolff Hirshow, Allen Iredale, A. C. Jacobsen, D. T. Kemp, A. S. Kitchin, H. C. Kodilinye, J. H. Levack, Louis Levine, Isidor Livingstone, James McAulay, John McCreadie, R. M. McGowan, A. F. McIntyre, J. P. McIntyre, G. N. MacKenzie, A. C. Mayer, K. R. Minto, N. R. Murdoch, A. M. Murray, Hugh Richmond, M. S. Robertson, William Sharpe, J. A. Sinclair, Solomon Slonimsky, J. A. Squair, Ralph Steinacre, Sarah Stewart, George Struthers, J. H. Taylor, Andrew Tracy, James Travers, E. H. Wallace, Jeanie F. Watson, I. B. L. Weir, David Wolfson, David Wright, and James Wyper

*With honours. †With high commendation. ‡With commendation.

Dr. Arthur James Ballantyne has been appointed the first holder of the new chair of ophthalmology established in the university under the terms of the will of Dr. Gavin Tennant.

Dr. Ballantyne was born in 1876 and received his medical education at the universities of Glasgow and Vienna. After graduating in 1898 he held house appointments at the Royal Infirmary, and in 1901 went as house surgeon to the Glasgow Eye Infirmary, where he joined the honorary staff in the following year. In 1909 he was appointed professor of physiology

at the Anderson College of Medicine, and from 1915 to 1920 was professor of ophthalmology both there and at St. Mungo's College. Since the latter year he has been lecturer in ophthalmology at the University. Dr. Ballantyne is now surgeon to the Eye Infirmary, consulting ophthalmological surgeon to the Western Infirmary, and honorary consulting ophthalmological surgeon to the Royal Maternity and Women's Hospital. He has been a vice-president of the Ophthalmological Society of the United Kingdom and of the Section of Ophthalmology of the Royal Society of Medicine, and besides many contributions to medical journals he is the author of a "Pocket Book of Ophthalmology."

Charing Cross Hospital Medical School

Dr. Andrew Topping, of the public health department of the London County Council has been appointed lecturer in hygiene and public health at this school in succession to the late Dr. C. W. Hutt.

British Postgraduate Medical School

An intensive refresher course intended primarily for general practitioners will be held at this school from June 17th to 29th. Particulars may be had from the dean of the school, Ducane-road, London, W.12, and early application is recommended because membership of the course is limited.

National Hospital for Diseases of the Heart

A special course will be held at this hospital from June 24th to July 5th, both mornings and afternoons. The membership is limited to twenty, and application should be made to the dean of the hospital, Westmoreland-street, London, W.1.

International Congress in Switzerland

From Sept. 9th to 14th a congress will be held at Montreux at which various medical subjects will be introduced by speakers from many countries, including Sir Henry Dale, F.R.S., from England. Particulars may be had from the secretariat of the Semaine Médicale Internationale en Suisse, Klosterberg 27, Basle.

Maternity and Child Welfare Conference

The National Conference on Maternity and Child Welfare will be held at the County Hall, Westminster Bridge, S.E., from July 1st to 3rd, under the presidency of Sir Hilton Young, the Minister of Health. A short post-graduate course for medical practitioners will be held on June 29th and 30th. Particulars may be had from the National Association for the Prevention of Infant Mortality, 117, Piccadilly, London, W.1.

Health Congress at Harrogate

The Royal Institute of Public Health and the Institute of Hygiene are next week holding their first joint congress, and the proceedings open on June 4th at Harrogate, with Lord Harewood as president. The five sections are devoted to state medicine and industrial hygiene, women and children, and the public health, tuberculosis, rheumatism and allied diseases, and hydrology, climatology and meteorology, and their presidents are respectively, Prof. J. Johnstone Jervis, Lady Evelyn Collins, Sir Pendrill Varrier-Jones, Sir William Willcox, and Sir Henry Gauvain. The arrangements include a garden party at Harewood House, a civic reception, a visit to Knaresborough, and many excursions in the neighbourhood.

Inquests in London

During the year 1934 there were 8548 deaths reported to London coroners, 15 more than in 1933. Of these deaths 721 took place in mental hospitals, 2351 in other hospitals and institutions. In the exercise of their discretion the coroners held inquests in 3455 cases or 88 less than last year. Post-mortem examination was directed by the coroner in 82 per cent. of inquest cases and 64 per cent. of the cases in which no public inquiry was thought necessary. A verdict of murder was returned in 11 cases, of suicide in 690 cases (70 less than last year). Deaths from want of attention at birth increased from 28 to 32. In all 1925 people met their death by accident (40 more than last year). There were 50 deaths by drowning. A verdict of "death from natural causes" was returned in 543 cases and there were 7 verdicts of "cause of death unknown." Of the total inquests 992 were held with juries. The information is taken from a report to the public control committee of the London County Council.

Dr. E. P. Cathcart, F.R.S., regius professor of physiology in the University of Glasgow, has been appointed chairman of the Committee on Scottish Health Services in succession to the late Sir John Dove-Wilson.

Cambridge Graduates Medical Club

A club dinner will be held at Sidney Sussex College, Cambridge, on Friday, June 28th, 7.30 for 7.45 P.M., at which Sir Walter Langdon-Brown, regius professor of physic, will preside. Accommodation for the night can be provided at the college. Cambridge graduates not already members of the club should communicate with one of the hon. secretaries, Dr. F. G. Chandler, 1, Park-square, London, N.W. 1, or Mr. W. D. Doherty, 10, Upper Wimpole-street, W. 1.

Ophthalmological Congress in Berlin

The second international Kongress für Irisdiagnostik, which originally was to have been held in May, will now take place in Berlin from Sept. 12th–15th. The secretary of the congress may be addressed at Leubnitzerstr. 2, Dresden A 24.

Research Defence Society

The annual general meeting of this society will be held at the London School of Hygiene and Tropical Medicine, Keppel-street, London, on Wednesday, June 12th, when the chair will be taken by the president, Lord Lamington. The ninth Stephen Paget Memorial Lecture will be delivered by Sir Frederick Hobday, principal and dean of the Royal Veterinary College, whose address on the relief of animal suffering will be illustrated by lantern and cinematograph.

London and Counties Medical Protection Society Limited

An extraordinary general meeting of this society will be held at Victory House, Leicester-square, London, on Wednesday, June 12th, at 3.30 P.M., when the annual general meeting will follow. The business of the meeting will be, in addition to receiving and adopting the annual report and balance sheet, an election to fill the place of the late Sir John Rose Bradford.

Opening of the New Middlesex Hospital

Last Wednesday the new Middlesex Hospital was declared open by the Duke of York, who in 1928 laid its foundation stone. The hospital has cost £1,250,000, of which £300,000 was received from an anonymous donor, and £200,000 from Mr. E. W. Meyerstein. The institute which bears his name was the gift of Sir John Bland-Sutton; Mr. S. A. Courtauld built the institute of bio-chemistry and endowed the chair of bio-chemistry; and Mr. W. H. Collins has given the new X ray diagnostic department.

The Duke of York, who was accompanied by the duchess, was met in the courtyard of the hospital by H.R.H. Prince Arthur of Connaught, president of the hospital. Prince Arthur, in welcome, pointed out that the reign whose jubilee had just been celebrated had made remarkable attempts to improve the condition of the people as a whole and to bring about a clearer realisation of the responsibilities of wealth. The Duke of York, in declaring the buildings open, congratulated the generous supporters of the voluntary hospital system on their great accomplishment at the Middlesex, and, speaking as president of the British Empire Cancer Campaign, pointed to the important part played by the hospital in the fight against that disease. Their Royal Highnesses then made a tour of the hospital and many of the visitors followed suit.

Demonstrations of Contraceptive Technique

On Thursday, June 6th, at 2.30 p.m., a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs. Marie Stopes, D.Sc., and Dr. Evelyn Fisher at the Constructive Birth Control Clinic, 108, Whitfield-street, London, W.1. Those attending will be enabled to practise the application of various contraceptive devices. Requests for tickets (which will be supplied to medical practitioners and senior students only) should be made in writing to the hon. secretary of the clinic.

Corporation of the City of London: Public Health Committee

A presentation luncheon was given on Wednesday last to the past chairman of this committee, Sir Percy Shepherd, when Captain G. S. Elliston, M.P., took the chair and the Lord Mayor and Sheriffs of the City were among the guests. After the loyal toast, Mr. Geoffrey Shakespeare, M.P., Parliamentary Secretary to the Ministry of Health, proposed the health of the Lord Mayor, and spoke eloquently of the duties that devolved on the corporation of the City in respect to public health, pointing out how multifarious were the directions in which the services of the committee were required. The resident population of the City might be small, but though only 10,000 persons slept in the City, the better part of a million passed their working lives in it, while the food supplied in bulk were in relation not to the residents but to the enormous county of London. He spoke of the work that had been put in by the House of Commons in regard to the Housing Bill, work now nearing its completion. Captain Elliston, proposing the health of the past chairman, Sir Percy Shepherd, related in an amusing way the duties of the chairman of the public health committee to the audience, testifying to the extremely satisfactory way in which his predecessor had discharged those duties. As far as they concerned the resident population that population was in charge of the committee from conception to cremation. Sir Percy Shepherd having replied, Captain Elliston proposed the health of the guests. Lord Balfour of Burleigh in reply spoke of the merits of the Housing Bill and the work which the measure as presented implied, but thought that after its issue from the House of Commons the House of Lords might have something to say. Sir George Truscott, senior alderman, proposed the health of the chairman, to which Captain Elliston briefly replied.

Lebanon Hospital for Mental Diseases

At the thirty-sixth annual meeting, held at Friends House, Euston-road, on May 20th, the chairman, Lord Alness, said that the history of this hospital was a romance. The acorn of 1896 had in 1935 become a spreading oak tree. In its inception two eminent Scottish psychiatrists—Thomas Clouston and David Yellowlees—now long deceased, had played a leading part; it was the latter who conceived the idea of building the hospital on the cottage or pavilion system. In memory of them the new building opened in November, 1933, had been named the Scottish House. But despite the extensions of recent years there was still need for a larger institution. In Syria there was only one bed in mental hospitals for every 16,000 people. After the audience had stood in respect for the memory of Dr. Henry Watson Smith, medical director for 25 years, who died suddenly shortly after the last annual meeting, Dr. Percy Smith presented the medical report, and Dr. E. W. G. Masterman the report of the general committee. Dr. Masterman said that Dr. R. Stewart Miller, who took up duty as director last September, was intimately acquainted with mental diseases in the Near East through his work as head of the Government mental hospital at El Khanka, near Cairo; he spoke Arabic and French, and was familiar with the officials and ways of these countries. Soon after his arrival in Syria, Dr. Miller had been appointed lecturer in mental diseases at the University of Beirût, and mental expert to the criminal court. The director's report showed the average number of patients in residence during the four quarters of the last twelvemonth to be 273, 279, 307, and 314. The ever-increasing demand for accommodation had required the addition of new wings to two of the older houses, enlargement of the central kitchen and laundry, a new central dining hall, and an isolation pavilion (for 32 patients and staff). The new water-supply from the mountains had been of great value. Fourth-year medical students from Beirût continued to attend for clinical demonstrations, and a course of lectures on mental nursing was being given to senior students of the College of Nursing, with practical demonstrations in the wards of the hospital. During the year 188 patients had been admitted (130 men, 58 women), making a total of 461 under treatment; 115 patients had been discharged, and of these 52 were recovered, 30 relieved, 27 not improved, 6 not insane. There had been 29 deaths. The patients came from all over the Near East and were mainly native to those parts, but sometimes persons temporarily resident in the country. The most frequent type of disorder was the schizophrenic reaction (77) and next the affective reaction (38).

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
WEDNESDAY, June 5th.
Surgery. Provincial Meeting in Cardiff.
History of Medicine.—5 P.M., Dr. J. D. Comrie: Eighteenth Century English Medicine.

BIOCHEMICAL SOCIETY.
FRIDAY, June 7th.—2.30 P.M. (Department of Medical Chemistry, University of Edinburgh), Short Communications.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, June 3rd.—10 A.M., Medical Wards, Skin Clinic. 11 A.M., Surgical Wards. 2 P.M., Surgical and Gynæcological Wards, Eye and Gynæcological Clinics. 4.15 P.M., Mr. Green-Armytage: Pelvic Ruptures.
TUESDAY.—10 A.M., Medical Wards. 11 A.M., Surgical Wards. 2 P.M., Throat Clinic. 4.15 P.M., Dr. Redvers Ironside: Diseases of the Sympathetic Nervous System.
WEDNESDAY.—10 A.M., Medical and Children's Wards, Children's Clinic. 2 P.M., Eye Clinic, Gynæcological Operations.
THURSDAY.—10 A.M., Neurological and Gynæcological Clinics. Noon, Fracture Clinic. 2 P.M., Genito-urinary and Eye Clinics. 3.45 P.M., Venereal Diseases.
FRIDAY.—10 A.M., Skin Clinic. Noon, Lecture on Treatment. 2 P.M., Throat Clinic.
SATURDAY.—10 A.M., Surgical and Children's Clinics, Medical Wards.
Daily at 2 P.M., Operations, Medical and Surgical Clinics.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY, June 5th.—4 P.M. (St. James' Hospital, Ouseley-road, Balham, S.W.), Dr. C. E. Lakin: Demonstration of Medical Cases.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.
THURSDAY, June 6th.—5 P.M., Dr. James Rishworth and Dr. Agnes Moncrieff: Homœopathy in General Practice. Dr. N. H. Hatfield: A Beginner's Difficulties.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, June 6th.—2 P.M., Mr. A. Simpson-Smith: Clinical Cases. 3 P.M., Dr. A. Signy: Typing of Organisms and Tests of Virulence.
Out-patient Clinics daily at 10 A.M. and Ward Visits (except on Wednesday) at 2 P.M.

ROYAL INSTITUTE OF PUBLIC HEALTH AND THE INSTITUTE OF HYGIENE.
TUESDAY, June 4th, to SUNDAY.—Health Congress at Harrogate.

INSTITUTE OF CHILD PSYCHOLOGY.
WEDNESDAY, June 5th.—6.15 P.M. (Friends House, Euston-road, N.W.), Dr. Margaret Lowenfeld: Play in Childhood. 8.15 P.M., Dr. Hazel Chodak Gregory: The Place of Habit in Development.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.
THURSDAY, June 6th.—5 P.M., Sir Henry Dale, F.R.S. The Active Substances in Ergot: a Thirty Years' Review.

INSTITUTE OF MEDICAL PSYCHOLOGY, Malet-place, W.C.
WEDNESDAY, June 5th.—3 P.M., Dr. H. Crichton-Miller: Alcoholism and Drug Addictions. 4.30 P.M., Dr. Cedric Shaw: Fatigue States.

CHADWICK LECTURE.
THURSDAY, June 6th.—5 P.M. (The Chelsea Physic Garden, Swan-walk, S.W.), Sir John Russell, F.R.S.: Modern Changes in Food Production.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE.
SUNDAY, June 2nd.—10.30 A.M. (Newcastle General Hospital), Mr. A. Logan: Surgical Cases.

UNIVERSITY OF BIRMINGHAM.
TUESDAY, June 4th.—3.30 P.M. (General Hospital), Dr. B. C. Tate: Demonstration of Skin Cases.
FRIDAY.—3.30 P.M. (Queen's Hospital), Prof. Philip Cloake: Circulatory Disorders of the Extremities.

ROYAL INFIRMARY, Manchester.
TUESDAY, June 4th.—4.15 P.M., Mr. W. M. Sutherland: Carcinoma of the Colon.

Appointments

DALTON, H. W., M.B. Dub., has been appointed Junior Assistant Pathologist to the Royal Infirmary, Sheffield.

DENNY-BROWN, D., M.B. N.Z., M.R.C.P. Lond., Consulting Neurologist to the Royal Hospital and Home for Incurables, Putney.

GILLESPIE, N. A., B.M. Oxon., Hon. Anæsthetist to the Princess Beatrice Hospital, London.

HUDSON, M. W. P., M.B. Lond., Hon. Anæsthetist to the Princess Beatrice Hospital, London.
LIGHTWOOD, R. C., M.D., M.R.C.P. Lond., Hon. Physician for Diseases of Children to the Bolingbroke Hospital, London.
ROTH, P. B., M.B. Aberd., F.R.C.S. Eng., Hon. Orthopædic Surgeon to the Bursiem Haywood and Turnstall War Memorial Hospital.
WILES, PHILIP, M.S. Lond., F.R.C.S. Eng., Assistant Orthopædic Surgeon to the Middlesex Hospital.
WILLIAMS, BRYAN, M.D., F.R.C.S. Edin., M.C.O.G., Hon. Obstetric Physician to the Sussex Maternity and Women's Hospital, Brighton.

Certifying Surgeons under the Factory and Workshop Acts: Dr. F. HUNTER (Turriff District, Aberdeenshire); Dr. H. G. MCPHERSON (Stonehaven District, Kincardineshire); Dr. T. A. SHAW (Stromness District, Orkney); Dr. J. H. WARDROP (Ellon, Aberdeenshire); Dr. J. A. SCREECH (Twickenham, Middlesex); and Dr. BEATRICE M. SELLAR (Aberlour, Banffshire).

London County Council Hospital Service.—The following appointments are announced:—
ANDERSON, J. S., M.D. Aberd., D.P.H., Medical Superintendent, Grove Hospital;
MORRIS, A. D., M.D. Brussels, Medical Superintendent, St. Leonard's Hospital; and
MCKEE, G. K., F.R.C.S. Eng., Senior Assistant Medical Officer, Grade II., St. Luke's, Lowestoft.

Vacancies

For further information refer to the advertisement columns

Accrington, Victoria Hospital.—H.S. £150.
Albert Dock Hospital, Connaught-road, S.E.—Res. M.O. At rate of £110.
Barnsley, Beckett Hospital and Dispensary.—H.P. £200.
Barnstaple, North Devon Infirmary.—Res. M.O. £150.
Bath Royal United Hospital.—H.P. £150.
Bedford County Hospital.—First and Second H.S. At rate of £155 and £150 respectively.
Belfast, Queen's University.—Tutor in Obstetrics. £200.
Belfast, Royal Maternity Hospital.—Res. H.S. At rate of £50.
Birmingham, Imperial Chemical Industries, Limited.—Asst. M.O. £500.
Birmingham, Selly Oak Hospital.—Res. Physician. £650.
Birmingham and Midland Hospital for Women.—H.S. At rate of £100.
Blackburn Royal Infirmary.—Res. H.S. and Cas. O. At rate of £175 and £150 respectively.
Bradford Royal Eye and Ear Hospital.—H.S. £160.
Brighton, Sussex Eye Hospital.—Hon. Clin. Asst.
Bristol University.—Lectureship in Physiology. £400.
Bucks County Council.—Asst. County M.O. and M.O.H. £800.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Canterbury, Kent and Canterbury Hospital.—Two H.S.'s. Each at rate of £125.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Two Hon. Assts. for Out-patient Dept.
Charing Cross Hospital, W.C.—Asst. Physician.
Chesterfield and North Derbyshire Royal Hospital.—Cas. O. Also H.S. to Ear, Nose, and Throat Dept. At rate of £200 and £150 respectively.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
City of London Institution, Bow-road, E.—Asst. M.O. £250.
Connaught Hospital, Walthamstow, E.—H.S. At rate of £100.
Croydon Mental Hospital, Warlingham.—Med. Supt. £1100.
Derby, Bretby Hall, Orthopædic Hospital, near Burton-on-Trent. Locum Res. Asst. M.O. At rate of £350.
Doncaster Royal Infirmary.—H.S. to Eye, Ear, Nose, and Throat Dept. £175.
Dorchester, Dorset County Hospital.—H.S. At rate of £160.
Downpatrick, Down Mental Hospital.—Res. Med. Supt. £800. Also Asst. M.O. £350.
Dreadnought Hospital, Greenwich.—Hon. Gynæcologist. Also H.P. and H.S. Each at rate of £110.
Dudley Guest Hospital.—Hon. Physician and Hon. Surgeon.
Dulwich Hospital, S.E.—H.P. At rate of £120.
Essex C.C. Oldchurch Hospital, Romford, &c.—Asst. M.O. £600.
Gateshead Mental Hosp.—Med. Supt. £800. Also Asst. M.O. £400.
General Post Office, Headquarters Medical Branch.—A.M.O. £500.
Hartlepools Hospital.—H.S. At rate of £150.
Hertford County Hospital.—Sen. H.S. Also H.S. At rate of £200 and £180 respectively.
Hospital for Tropical Diseases, Gordon-street, W.C.—Two H.P.'s. Each at rate of £120.
Hospital for Women, Soho-sq., W.—Res. M.O. At rate of £100.
Hull Municipal Maternity Home and Infants' Hospital.—Jun. Res. M.O. At rate of £100.
Indian Medical Service.—Commissions.
Jersey General Hospital and Poor Law Infirmary.—Res. M.O. £100–£200.
Keighley and District Victoria Hosp.—Res. M.O. At rate of £180.
King's College Hospital, Denmark Hill, S.E.—Asst. Physician.
Leeds City Hospital for Infectious Disease.—Med. Supt. £840.
Leeds Hospital for Women.—Hon. Anæsthetist.
Leicestershire and Rutland Mental Hospital, Narborough.—Asst. M.O. £350.
L.C.C.—Jun. M.O.'s. £7 a week. Also Temporary District M.O.'s. At rate of £175.
Liverpool, David Lewis Northern Hospital.—Cas. O. and H.S. £120 and £80 respectively.
London University.—Laura de Saliceto Studentship. £150. Also University Readership in Surgery. £800.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester, St. Mary's Hospitals.—Two H.S.'s for Whitworth-street West Hospital. Also Two H.S.'s for Whitworth Park Hospital. Each at rate of £50.
Mid-Wales Counties Mental Hospital, Talgarth, Breconshire.—Asst. M.O. £400.
National Temperance Hospital, Hampstead-road, N.W.—Cas. O. and H.P. At rate of £120 and £100 respectively.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Two Med. Regs. Each £250.
Northampton, County Mental Hospital, Berrywood.—Med. Supt. £900.
Oldham Royal Infirmary.—H.S. At rate of £175.
Plymouth, Prince of Wales's Hospital.—H.P., Res. Anæsthetist. Also H.S. to Spec. Depts. Each at rate of £120.
Princess Elizabeth of York Hospital for Children, E.—H.P. and H.S. Each at rate of £125.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.S. At rate of £100.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Registrar. 20 guineas.
Queen Mary's Hospital for the East End, E.—Res. M.O. and Two Cas. O.'s. Each £150. Also Two H.S.'s, H.P., Obstet. H.S., and Res. Anæsthetist. Each £120.
Royal College of Physicians of London.—Leverhulme Research Scholarship. £500.
Royal Masonic Hospital, Ravenscourt Park, W.—Res. Surg. O. At rate of £250.
Royal Northern Hospital, Holloway, N.—H.S. and H.P. Each at rate of £70.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. At rate of £180.
St. David's Hospital, Silver-street, N.—Temp. Visiting M.O. At rate of £250.
St. Mary's Hospital for Women and Children, Plaistow, E.—Pathologist. £200.
St. Nicholas Hospital, Plumstead, S.E.—Temp. Asst. M.O. At rate of £250.
St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—Clin. Assts. to Hon. Staff.
Salford Royal Hospital.—Two H.S.'s. Each at rate of £125.
Salisbury General Infirmary.—Res. M.O. £250.
Salvation Army, Mother's Hospital, Lower Clapton-road, N.—Two Jun. Res. M.O.'s. At rate of £80.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Hon. Surgeon to Out-patients. Also Registrar. £130.
Sheffield Royal Infirmary.—Two H.S.'s. Aural H.S. Ophth. H.S. Also Asst. Cas. O. Each at rate of £80.
Sheffield University.—Lecturer in Bacteriology. £600.
Shoreham-by-Sea, Sussex, Southlands Hospital.—Asst. M.O. £300.
Stafford, Staffordshire General Infirmary.—H.S. At rate of £200.
Stockport Infirmary.—Res. Surg. O. £250.
Stoke-on-Trent, Longton Hospital.—H.S. £160.
Stretford Memorial Hospital.—Surgical Asst. 50 guineas.
Surrey County Council.—Two Asst. M.O.'s. Each £600.
Swindon and North Wilts Victoria Hosp.—Visiting Radiologist.
Warwick, King Edward VII. Memorial Sanatorium, Hertford-hill. Jun. Asst. M.O. At rate of £200.
West Bromwich and District General Hospital.—H.P. At rate of £200.
West Bromwich, Hallam Hospital.—Res. H.P. At rate of £200.
West London Hospital, Hammersmith-road, W.—Chief Clin. Asst. in X Ray Dept. £125. Cas. O. £250. Also H.P. and 2 H.S.'s. Each at rate of £100.
West Riding Mental Hospital, Wakefield.—Fifth Asst. M.O. £350.
Weston-super-Mare General Hospital.—Res. H.P. £150.
Willesden General Hospital, Harlesden-road, N.W.—Res. Cas. O. At rate of £100.
Windsor, King Edward VII Hospital.—Reg. M.O. £150.
Wolverhampton Royal Hospital.—H.S. At rate of £100.
Worksop, Victoria Hospital.—Sen. H.S. At rate of £150.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bury St. Edmunds (Suffolk) and Wainfleet (Lincolnshire).

Births, Marriages, and Deaths

BIRTHS

BIRCH.—On May 24th, at Liverpool, to Marjorie (née Bold), wife of C. Allan Birch, M.D., M.R.C.P., of a son.
CURSHAM.—On May 19th, at a Norwich nursing-home, the wife of Anthony Cursham, M.R.C.S. Eng., of a daughter.

DEATHS

BEVAN.—On May 22nd, Richard Bevan, M.R.C.S. Eng., D.P.H., of East Sheen, S.W., aged 81.
FLOYD.—On May 22nd, at Bournemouth, Stephen George Floyd, M.D. Lond., late of Grays, Essex, in his 68th year.
JAMES.—On May 20th, at Cadmore End, Bucks, Walter Culver James, M.D. Aberd., F.R.C.S. Edin., late Surg. Colonel H.A.C.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

PREVENTION OF THE COMMON COLD.—The suggestion made by "A London G.P." that thyroid extract may reduce the susceptibility to the common cold has reached a layman, who writes: "About fifteen years ago I had a breakdown in health, and a well-known London physician in Wimpole-street (who died a few months ago) prescribed, inter alia, gr. ¼ thyroid tabloids, one per diem. These I have taken from time to time and I have been free from colds. Before taking them I had colds rather frequently. It was not for these colds that I sought his advice."

NOTES, COMMENTS, AND ABSTRACTS

LIFE IN ABYSSINIA

MOST of us know about as little of Abyssinia as of Borneo, about which Dr. A. J. Copeland had something to tell us last week. A European woman dentist who practises in Addis Ababa writes of her own experience there in a German contemporary.[1] The vast majority of Abyssinians, Miss Dabbert says, live in round huts roofed with straw and without windows or chimneys. The walls are often defective, and through the cracks the cold night air penetrates. Adults and children sleep on straw mats or ox skins. The half-naked children, clad in rags, grow up in this primitive condition. Food consists chiefly of roast corn and a kind of cold pancake, with the occasional addition of a pepper sauce. There is no infant care and no idea of hygiene. The infant mortality is very high—about 50 per cent.—most of the deaths occurring in the first year. There is no family life, as marriages can be easily dissolved by either husband or wife without any legal complications; there are consequently no illegitimate children.

Through the mixture of races in Abyssinia there are many shades of skin colour, from light brown to the darkest ebony, but in spite of this nationalism is very strong, and is apparent in the dislike of European clothes and the love of the national dress. This consists of trousers, shirt, a kind of toga-like shawl of thin white cotton with a coloured border and a big wide brimmed hat. Soap is unknown, and the seeds of a plant called "Endott" are used instead. They are very effective. If water is handy the Abyssinian washes face and hands every morning and even the poorest peasant washes before and after meals. The feet are washed at night, especially between the toes to get rid of the jiggers. Bathing, especially in the hot springs with which the country is so well endowed, is indulged in frequently. The most famous of these springs is "Fel-Oha" at the capital Addis Ababa and the water comes from it boiling hot. There is a radio-active hot spring, good for rheumatism, at Errer Gotha, and a hot spring at Ambo also good for this complaint. There are special baths for hysteria and nervous diseases.

Though there are six big hospitals, several dispensaries and about 30 European doctors in the capital, the native healers have the confidence of the people, who will often return to them after having been successfully treated by Europeans. Miss Dabbert describes the methods used by native practitioners. Venereal disease is treated by secret remedies in which mercury plays the chief part. Cupping is carried out with an ox horn; the air and a definite quantity of blood is sucked up forcibly by the operator. Cauterization of the skin with a hot iron is widely used for the relief of pain. Most of the native remedies are herbal; decoctions, powders, and poultices made up from simple dried powders. There is here, she thinks, scope for research by pharmacologists. Superstition plays a large part in the preparation of their remedies. The plants have to be collected at a certain time of the day or night, and must be prepared and given in a secret manner. Cusso, the flower of a beautiful tree dried and made into a paste with water, is given for tape worms; the taste is very unpleasant and it often causes death from enteritis. Natives react quickly to drugs, and even severe wounds heal in a short time. Vaccination is practised, but with pus taken from a small-pox case. Circumcision is done by the priests 10 to 15 days after birth, and is very primitive. Leprosy is widespread; the natives have no remedy for this. There are two leper colonies, one organised by Franciscan monks and nuns, the other, very efficiently, by Americans.

Professional begging is rife, and compassion solicited for such ills as leprosy, elephantiasis and deformities.

At Addis Ababa, which is 8000 feet above sea level, pneumonia does badly and chronic lung cases do well. Typhus occurs in epidemics, worse in the rainy season. Tick fever also gives trouble in the rainy season. Typhoid is prevalent when the water begins to rise in the wells.

The Abyssinian government has started a network of hospitals throughout the country. There are also Catholic and Protestant medical missions. In the last ten years cultural progress has been rapid. The Abyssinians—or as they prefer to be called, the Ethiopians—are an energetic people, and it is, Miss Dabbert concludes, only a question of time for a proper organisation of medical services to be developed.

[1] Deut. med. Woch., April 26th, May 3rd, and 10th, 1935, pp. 682, 719, and 766.

DR. J. H. WATSON

THE current number of *King's College Hospital Gazette* contains an amusing lecture delivered to the Listerian Society of the hospital by Mr. Ivor Back upon the personality of "my dear Watson," the companion and Boswell of Sherlock Holmes. And the actual introduction of Watson to Sherlock Holmes has been compared by a previous writer to that effected by Thomas Davies, the ex-actor and Covent Garden bookseller, of Boswell to Johnson. By industrious and ingenious extractions from the various publications dealing with the exploits of Sherlock Holmes, Mr. Back has been able to construct an accurate account of Dr. Watson, so that in regard to his medical school, the dates of his qualifications, and his tenure of appointments a paragraph suitable for insertion in the Medical Directory could be made, while out of other personal details as to his gallantry in the field, foreign travel, and marriages, a very readable autobiography for "Who's Who" could be constructed. Doubt, however, remains as to Dr. Watson's Christian names, which he would have removed had he corrected proofs for either of those valuable books of reference; in one story he is called John, and in another his first wife alludes to him as James, while the implication of "H" remains concealed. It would seem that Watson was an essentially modest man, for he certainly, as Holmes's biographer, wrote himself down as an ass, while Mr. Back makes of him, through documentary evidence, a brave man and a competent doctor.

BIDLOO AND COWPER

IN the March issue of the Annals of Medical History [1] there is an interesting essay by Dr. Fenwick Beekman, of New York, on systems of anatomy published at the end of the seventeenth century by Godfried Bidloo and William Cowper, in which the question of plagiarism by the latter is discussed in some detail. Bidloo, a Dutch anatomist, was born in 1649 and wrote his "Anatomia Humani Corporis" when he was about 36 years of age. In 1688 he became professor of anatomy at the Hague and came to England after the accession to the throne of William of Orange. The King consulted him with regard to his health when the Dutchman differed strongly from the English physicians who were also called into consultation. The King seems to have believed in his own countryman, for Bidloo was appointed general superintendent of civil and military hospitals in Holland, but on taking up office he got into trouble in connexion with the caricatures of certain judges. He was imprisoned but released at the instance of William and in 1693 was back in England where he was appointed inspector of military hospitals. In the following year he returned to Holland as professor of anatomy and surgery at Leyden, but being in constant attendance on William III. he neglected his professorial duties. We gather from Dr. Beekman's account of him that he was a difficult man, but he certainly was placed in difficult positions. His treatise on anatomy was recognised as valuable and it was illustrated in accordance with the grand but

[1] New York: Paul B. Hoeber, Inc. $2.50.

rather inaccurate manner of the time. The drawings are attributed to Gerard de Lairesse, and from them the trouble arose.

William Cowper, an English surgeon, was born 17 years later than Bidloo, and the first edition of his book "Anatomy of the Human Body" was published in 1698, by which time he was a well-known practitioner. This book was an advance on Bidloo's and in England was recognised at once as a standard work. But immediately on its publication arose a fierce quarrel as to whether and how much Cowper had plagiarised from Bidloo. Dr. Beekman discusses the charge with great detail and makes it clear that while Cowper may have been a superior man of science and a more original observer, he none the less made an unfair use of Bidloo's plates, and certainly he put up in defence of his actions a very thin explanation. The question of plagiarism to the ordinary observer would seem to be settled by looking at the title-page to Bidloo's work and the title-page to the work by Cowper; reproductions of these allegorical designs are supplied by Dr. Beekman and no one can doubt that the later one was copied from the earlier.

VITAMIN A IN FISH LIVER OIL

CONFLICTING statements in connexion with halibut liver oil are dealt with in a circular which we have received from the Crookes Laboratories (British Colloids Ltd.), Park Royal, London, N.W. The circular explains the procedure for the accurate determination of vitamin A in oils, and has been written to meet embarrassments of medical men who wish to understand the results of contradictory assays. Taking the standpoint of being pioneers in the field, the circular from the Crookes Laboratories describes the advantages and disadvantages of the different methods now in use for such determination and the reason for adopting a particular one.

The methods described are (1) blue test, (2) spectrographic, (3) vitameter, and (4) biological, and the advantages, disadvantages, and standards of accuracy obtained are set out in tabular form for each method. Since all the methods measure the amount of vitamin A present in the oil, they can be correlated in the case of halibut liver oil, and the relationship between them is shown as follows:

Per cent. vitamin A	1
(1) Blue units (C.P. 20 per cent.) ..	800
(2) E^{1}_{1} per cent.	16
(3) E^{1}_{1} cm.	
(4) Biological international growth units	25,000

The circular states that in practice oils are evaluated by either the blue test or the vitameter method with an occasional check by the biological method, but the spectrographic method is held to give greater accuracy—an argument for the replacing by it of the blue or Carr-Price test as far as the Crookes Laboratories are concerned. But the value under the Carr-Price method corresponding to the vitamin content will be quoted from the laboratories for a limited time, future determinations being carried out by, and guarantees being based on, the spectrographic method.

Crookes halibut liver oil is stated to be available in various forms, all of which are issued with a certificate as to vitamin potency. They include collosol halibut liver oil (as drops and capsules), Halimalt, a blend of oil with malt extract and orange juice made palatable for children; Halycitrol, in which glucose takes the place of the malt extract in Halimalt; and Halycalcyne, where calcium phosphate is added to the oil, and regarded as a prophylactic, while indicated in conditions of calcium deficiency.

MEDICAL PIONEERS OF MOTORING

IN a recent obituary notice of Mr. F. W. Ramsay, who died at Bournemouth in his 73rd year, he was described as a pioneer motorist, and a founder member of the Royal Automobile Club. The final instalment in *St. Bartholomew's Hospital Journal* for May of Mr. E. C. O. Jewesbury's entertaining biography of Charles Barrett Lockwood recalls him as another pioneer motorist. Lockwood was the first member of the Bart.'s staff to drive himself to hospital in his own car. The machine was a Panhard with tube-ignition, painted a bright scarlet, and it was a disappointment to students that it was not driven into the hospital square, but always left outside in Smithfield—desirable, no doubt, in view of the disturbance to patients likely to result from the preliminaries to its departure. A delightful picture of this machine, reproduced from a photograph belonging to Sir Archibald Garrod, appears in the article. It was known by students as "The red peril." Mr. Jewesbury tells a story of Lockwood getting into trouble with the police near Chancery Lane, and in consequence arriving late in his ward. "Are there any policemen in here?" he demanded. "Three," he was told, and they were almost ready to go. "Discharge them," he said. Lockwood had the sagacity to see what value the motor-car would be to the medical profession and in 1906 he became chairman of a "committee of medical men who are users of motor-cars."

QUINS

A CORRESPONDENT writes: "The acquisition of speed at any price seems to-day to be the ruling motive; clipped words, and initials as substitutes for titles, or as implying whole conditions or sentiments, not only are frequent in speech but are increasingly appearing in serious literature, a saving of time for speaker, reader, and writer being the common motive. The Dionne quintuplets born in Ontario in the middle of 1934 have received their meed of publicity from you, and I learn from various newspapers that they are alive, and that the record of their activities affords plenty of copy, while they are now referred to as 'The Quins.' We must evidently get used to a new world of abbreviations. It may be necessary to realise that when the mid comes she may assist into the world trips and quads; that the amb takes the pat to the hosp where the surg ops on him; that the doc gives the panpat a scrip which he takes to the chem, who puts the med in a bot and says OK nix to pay. It is all going to be very difficult for those not bred up in modern hurry."

MEDICAL FILMS

Dr. BERNARD KAPLAN writes:—Medical men who are amateur cinematographers may be interested to learn that the Institute of Amateur Cinematographers has established a section devoted to medical and allied subjects. The Institute will be pleased to receive films for classification and criticism, and helpful advice will be offered, if desired, on the technical or other aspects of the subject. Where applicable, copies of original films will be made for circulation amongst medical men and medical bodies, and it is hoped that a useful and instructional library may be built up. Foreign workers have intimated their interest in this branch of the Institute's activities, and their observations and pictorial records should be of the utmost value. The films comprising this library will be under the control of a medical man, and due care will be taken of all those entrusted to the Institute. I must emphasise that no charge is made, either for help, or to those interested in the viewing and showing of these films. It is felt that the services offered will ensure that films made by individual workers will receive attention and recognition. Films and communications should be addressed to me, c/o The Institute of Amateur Cinematographers, Burley House, Theobald's-road, London, W.C. 1.

ERRATUM.—In some of the copies of THE LANCET last week the figures in Mr. Green-Armytage's statement on p. 1255, col. 1, that 3 ounces of fresh protein contains 7 grains of calcium were transposed.